

# COAL AGE

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## *The Value of Service*

SERVICE is difficult to evaluate. For the act of production there have been developed in the business world and in public opinion standards by which to measure the reasonableness of the rate of return or profit. Thus we find that in past times interest of 6 per cent on the use of money was considered adequate where safety was of first consideration, but that twice that return on an investment was expected if more than ordinary risks were involved. In production, which involves the investment of definite amounts of capital, the rate of return can be measured in terms of interest on the investment.

Service, on the other hand, cannot be so calipered. That which requires the investment of personality is service and we have no criterion for measuring the dollars and cents equivalent of personality. It is likewise impossible to calculate the investment value of experience, professional or business. Selling is a form of service that combines both experience and personality and there can be no fixed rate of recompense for either. In an address before the American Economic Association in December, George Cushing, managing director of the American Wholesale Coal Association, said that for the past two years his organization had been seeking to standardize the coal-jobbing business, but that it had made no progress beyond a tentative proposal covering the rate of return, which it was suggested should be 8 per cent of the value of the coal handled. He was frank to say that the association was not in a position to defend the idea of either the percentage or the amount.

A flat percentage as a jobbing commission can be defended only as a maximum in times of stress and as a means of holding down the less scrupulous to terms that will not throw the industry into disrepute. Thus the apparently successful endeavors of the New York Wholesale Coal Trade Association to limit commissions to 8 per cent served to satisfy the public and the Department of Justice clamor for steps to lower the cost of coal. In its effect on conditions in 1920, results have amply justified the wisdom of the course taken by Mr. Allen, the secretary of the New York association. The more conservative of the jobbers, and the ones therefore whose judgment it is more prudent to follow, adopted the 8 per cent commission on sales, but with a maximum in all cases of 50c. per ton.

In one respect at least the Calder committee has cleared the air, for by statements from Senators both in the hearing and on the floor of the Senate, it has recognized as reasonable and not subject to censure, the 50c. commission allowed by the War Department in its contracts for the purchase of coal. The clean bill—even though somewhat grudgingly given—accorded to the transactions between the Wentz company and the War Department is something for which the entire

wholesale trade, as well as the particular company involved, is to be congratulated. It constitutes a clear and more or less official recognition of the money value of a particular service.

Lest anyone conclude, however, that we consider 50c. per ton to be the true and everlasting value of the service involved in buying and selling coal, we add that the selling, like the coal itself, deserves recompense in proportion to its excellence. We must get away from the war-bred idea that a single standard of wage to laborer or of profit to capital should accrue to everyone. The producer of poor coal has no right to expect the same rate of profit as he who produces the best coal; the inefficient laborer cannot expect the same wage as the efficient, though each has a right to expect a profit or a living wage. One jobber may deserve but one-tenth of 50c. for the service he performs, while another may have earned the maximum. After all, there is as much competition in selling service as in producing commodities.

## *Let's Have Done and Away*

IT MUST be disheartening to the Calder committee to have had its fond hopes so badly blasted. Having given the wide world notice that startling disclosures would follow its investigation of the National Coal Association the committee, in its frantic effort to make good, has let slip no opportunity to get something "on" the association through its officers. Some kind friend should have tipped off Mr. Miller that he was inviting defeat when he started muckraking that organization. If ever an organization has scrupulously lived and acted within the spirit as well as the letter of the law it has been the National Coal Association. No better proof of this is needed than that the most hostile critic, purposely looking for a loophole of attack, armed with the correspondence and records of the association, has found nothing on which to hang his case.

Imagine the chagrin of the committee sleuths after having discovered in the minutes of some meeting a resolution to the effect that the coal operators do not favor governmental control of their industry; to have the fact admitted by the association without argument and without apology! Why should they not take such a position?

Ah! but the association was a party in drawing the service orders of the Interstate Commerce Commission! Grave impropriety, says Mr. Miller, and he promptly wants to take the emergency power away from the commission.

In the first place we may ask what is improper in the relations of the operators and the government in this connection? Does not the judge of the court in an equity suit even request the attorney for the winner to draw the bill? Is this practice heinous? More than twenty service orders were issued by the Interstate

Commerce Commission in 1920, some of which the coal men certainly considered to be ill-advised, notably those giving assigned cars to public utilities. Is Mr. Miller about to accuse the National Association of Gas and Electric Service of having had improper relations with the Interstate Commerce Commission?

The Interstate Commerce Commission decided matters for itself. It assembled its own data, obtained wherever it could get it; consulted those best informed, whether public utility, coal, or railroad interests, and issued its orders.

The public appetite has been whetted for a "goat" in this coal sensation and none is forthcoming. Consumers of coal are entitled to know whether a conspiracy in any form caused their coal costs to rise in 1920. The Calder committee—self appointed disclosers—have volunteered to do the job.

Having gone so far, will Mr. Miller be a "quitter," having discovered that his investigation bids fair to prove a boomerang? Is he going to pursue to a conclusion Judge McGee's complaint about Lake contracts and the general question of the necessity for the service orders of the Interstate Commerce Commission?

If Senator Calder is investigating the coal industry in the interests of the consuming public he will complete the record. We confess to a growing impatience over the delay of the committee in taking up its real work—the building industry. The Lockwood committee in New York City has found this a fertile field.

### *Plasticity in the Roof*

**B**ROAD generalizations regarding coal seams and their roofs are always dangerous, and the lower Kittanning bed is not exceptional in this regard. Consequently, the remarks in the article "Why Does the Roof of the 'B' Seam Develop Heavy Falls on Narrow Work?" which we print today must be regarded as having largely local reference. Many of those who have operated the lower Kittanning seam where the coal is thinner and less clean and the roof less wanton will find the description fits ill with their own particular case.

For the roof of this seam is sometimes regarded as peculiarly good and is usually thought to have no fault but a tendency to "buckwheat"—that is, comminute and fall under the influence of frost and air. If the Freeports in those parts were only as reliable as the lower bed there would be fewer accidents. In fact there are some who say that the lower Kittanning should be indicted not for its weakness but for its strength. It rides the pillars, pushes them over and lifts the bottom and still refuses to break.

G. A. Ashley rightly says that the coal field described is located somewhat strangely. The wonderful low-volatile qualities of its coal, which give superiority to its fuel, would in the order of things place it along the extreme edge of the Appalachian coal field instead of somewhat back. A greater degree of mountain-making stress must have been placed upon it than upon the areas northeast and southwest of it, which stand equally distant from the line of disturbance. The stress extended the volatilization of the coal and probably fractured the roof.

It would not explain, of course, the presence of clay above the coal, and with the writer of the article we are disposed to believe that clay to be not only a coincidence but a cause. But the mountain-making pressures might

account for the fracturing of the roof and for the fact that these lines of fracture are parallel. It is interesting to note that in some parts this parallelism is not by any means so obvious. In some sections there are distinct angles between the fracture lines of certain rock beds and the lines of fracture of the beds below and above them.

Much truth is contained in the author's denial of the importance of the air as an agent in suddenly bringing down large masses of roof. Its effect is wholly surficial and gradual and arises more from frost than from any other cause. It is more likely that the trouble which he records arises from soft beds which have hitherto been kept in place because everywhere loaded and supported, and consequently in a perfect balance of forces. They have not been enabled to move till the accident of mining freed them from this constraint. As the bottom of the Panama Canal was lifted under the pressure of the adjacent hills as the canal was constructed and as the beds in the bottoms of valleys are found lifted up by pressure, so it is likely that the weaker beds in the roof are made to flow toward areas over openings in the coal.

One can scarcely conceive how much the clay beds have been harrowed and squeezed since they were laid down. One needs only to view the irregular cross sections of anthracite strata to realize that the general uniformity of depth of deposit which obtained in the Carboniferous era over small areas was rudely destroyed by the crumpling of the measures and by the filling with the softer rocks of the voids thus formed or tending to be formed.

The author's recommendations seem entirely sound, but even he would not advise their adoption in parts of the same seam where a roof radically different is found. The value of the article rests not on its characterization of the lower Kittanning bed but on its hints as to the effect of clay in the roof and as to the methods by which its evil effects may be best overcome. Certain roof failures in southern Wyoming much resemble those described in the article, and clay, not water, may be the cause.

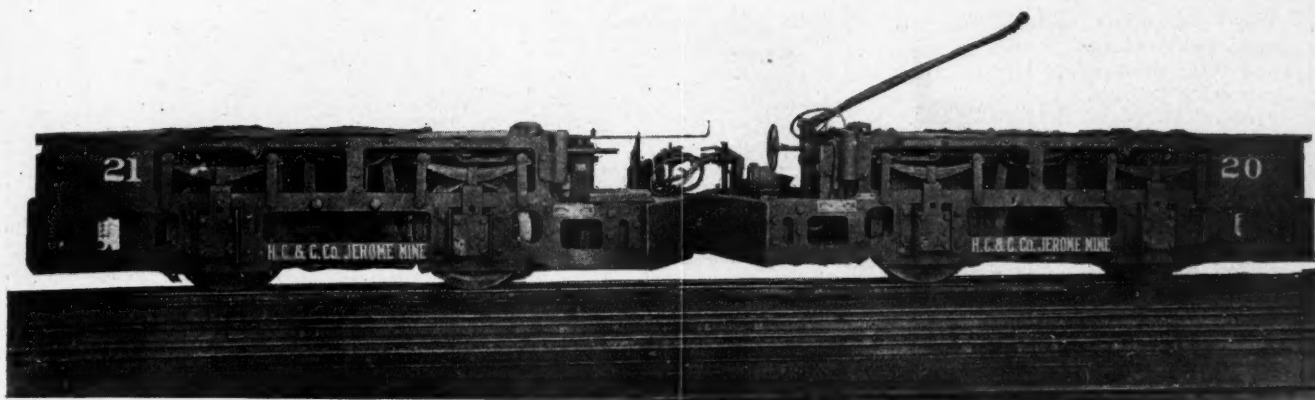
### *The Cost of Federal Coal Control*

**R**EPORTS from Washington are that the U. S. Fuel Administration spent \$4,824,681 of public money during its life of twenty-two months. Although this may represent the cost of fuel control—the oil division of the administration is included in this total—paid directly by the Federal government, it does not cover the actual cost of the work. In the first place, fifty-two dollar-a-year men (whose checks are framed and will never be cashed) if paid salaries would have added much to the sum total. But the big item of cost that does not show up in any government accounting was the direct contribution of the coal operators in supporting first the offices of the district representatives and later the production managers. Estimates of the cost of this work, paid by assessments and contributions from the producers of coal, range up to \$2,000,000.

If, however, these items all be added we find that control cost less than one cent a ton—a creditable figure when it is considered that for nearly a year every ton produced and shipped was under direct, detailed control; that coal was inspected and the public taught conservation, and a multitude of other important activities engaged in.



# Changes in Electric Locomotives to Meet Demands for Heavier Duty



Frames of Bar Steel Resist Damage and Assist Ventilation of Motors—Leaf Spring Has Advantage Over Helical—Thrust Resisted by Removable Lid of Boxing—Detachable Rims and Split Gears Are of Questionable Merit—Tandem Locomotives and Fan Ventilation Meet Demand for More Power

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East Pittsburgh, Pa.

**T**RANSPORTATION at mines is effected by one of two classes of agents—locomotives or rope haulages. Rope haulage usually is installed only where the grades are too steep to be traversed by locomotives. Many different types of locomotives—steam, compressed air, gasoline and electric—have been tried out for mine service with more or less success. The electric locomotive, however, is the one that has given the most nearly universal satisfaction.

Steam locomotives have been used to a limited extent, but on account of the escaping gases and the fire risks involved, their application is practically prohibited. The compressed-air locomotive has a field limited to extremely gaseous mines, but its cost of operation is so high that it is installed only as a last resort. This machine has a restricted radius of action, for it has to be charged frequently.

The gasoline locomotive is a complicated piece of machinery, and, on account of the poisonous nature of the exhaust gases, can be used only in main headings having a liberal amount of ventilation. Nevertheless, in some cases it has proved a success.

The electric mine locomotive has none of the objectionable features of the foregoing and can be built to suit any conditions where a locomotive is needed. It was not until the late nineties that the electric locomotive was used to any extent in mine service, and the first machines were rather crude when compared with later types. Railway equipment was first tried, but as the demand grew special machines were designed and built to suit mining conditions.

Figs. 1 and 2 show two views of a 22-ton locomotive built for mine service in 1896. Two bipolar railway motors were used; motion was transmitted to the outside drivers through double reduction gears. As shown in

the illustration, all drivers are connected by side rods. Although this locomotive was largely a makeshift, it was kept in active service for seventeen years, being finally scrapped in 1913.

The first locomotives designed to meet mining conditions were made with cast-iron frames and single reduction geared motors provided with babbitt axle bearings and grease lubrication. These machines were equipped with non-interpole motors using similar bearings and lubrication. This general type of locomotive frame and motor persisted until about 1910, when it was recognized that the entire machine should be revamped and a more satisfactory construction and better equipment adopted.

## STRUCTURAL-STEEL AND PLATE FRAMES BEND

In earlier days experiments were made with structural-steel and plate frames, but it was found that while this type of structure could not be broken, it was rather easily bent whenever a severe accident occurred. After this experiment the Westinghouse company developed the bar-steel frame as the most satisfactory from every standpoint. This type of frame is made of cast steel and has been used by the Baldwin Locomotive Works for many years on main-line steam-locomotive service, where it has been an entire success.

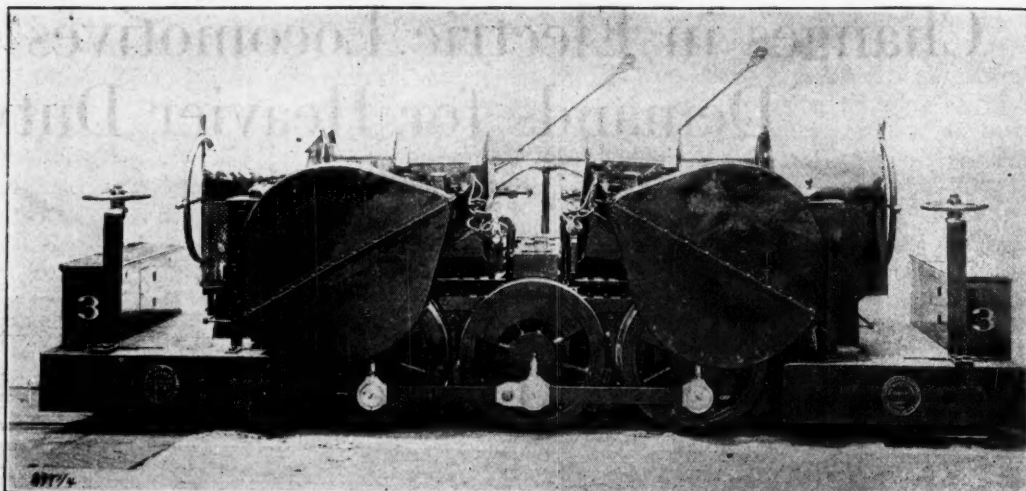
The advantage of this type of frame over the cast-iron, plate or structural frame is that as no rivets are used there are none to become loose; its design allows the material to be distributed to the best advantage; it is stronger than any other type of frame of the same weight; it permits easy access to the brakes, brake rigging and motors for inspection and oiling; it allows of a better ventilation of the motors and resistance and makes it possible to blow out dust which otherwise would settle on the apparatus.

It cannot be broken and if bent through severe col-

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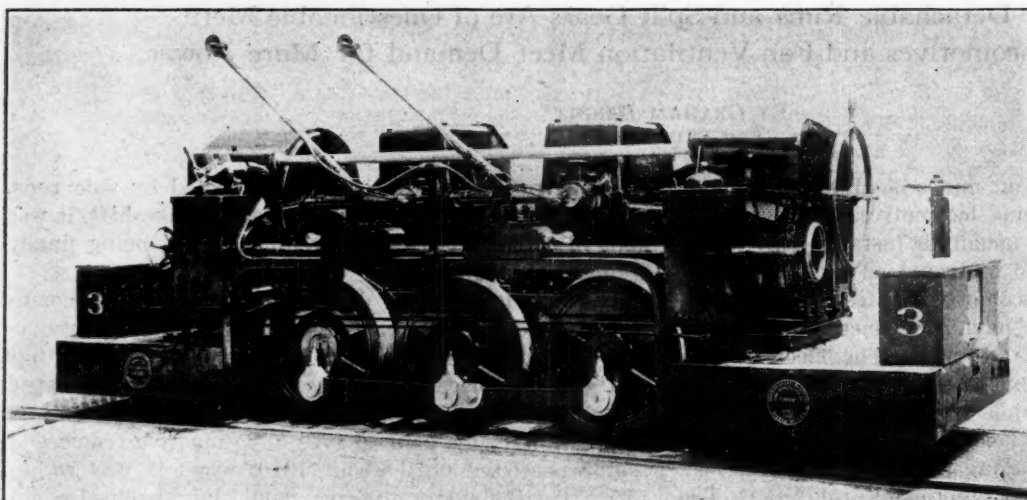
**FIG. 1**  
**Mine Locomotive of Early Type**

This machine used two motors and three drivers connected by side rods. Although this machine was somewhat crude in both design and construction, it gave excellent service for seventeen years.



lisions it can readily be straightened. The better ventilation obtained increases the capacity of electrical equipment so that it can be relied on for all-day service. Fig. 3 shows a 10-ton locomotive with bar-steel frame which illustrates the features just mentioned. Most of

After several years of experimentation Westinghouse engineers have found that the helical type of spring over the journal box allows only a rather limited motion and does not produce the good track-holding qualities desired for best operation. The Baldwin Locomotive



**FIG. 2**  
**Another View of Same Locomotive**

Note that there were two trolleys set somewhat low on the machine. The locomotive weighed twenty-two tons and was built in 1896, being scrapped only in 1913.

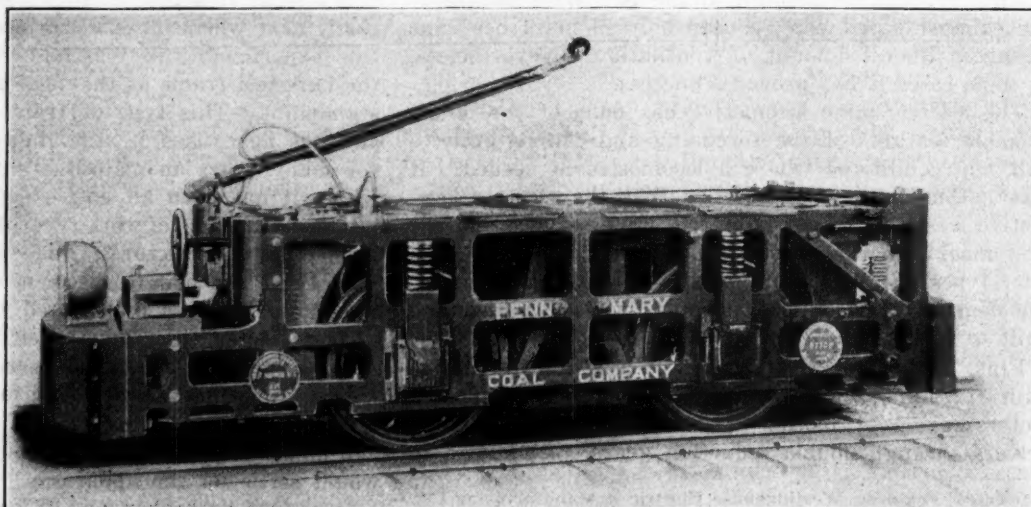
the locomotives manufactured are furnished with frames placed outside the wheels, thus affording the much-needed accessibility. The bar-steel frame castings can be so arranged that the motors may be hung either inside or tandem, with frames either inside or outside.

Works has for a number of years used the leaf spring over the journal box on large mine locomotives, especially those having three motors.

It has adopted this type of spring for all two-motor locomotives, as it greatly increases the amount of spring

**FIG. 3**  
**Locomotive with Bar-Steel Frame**

Ten-ton locomotive. Many advantages are claimed for this skeleton frame. Chief of these are greater accessibility and better ventilation.





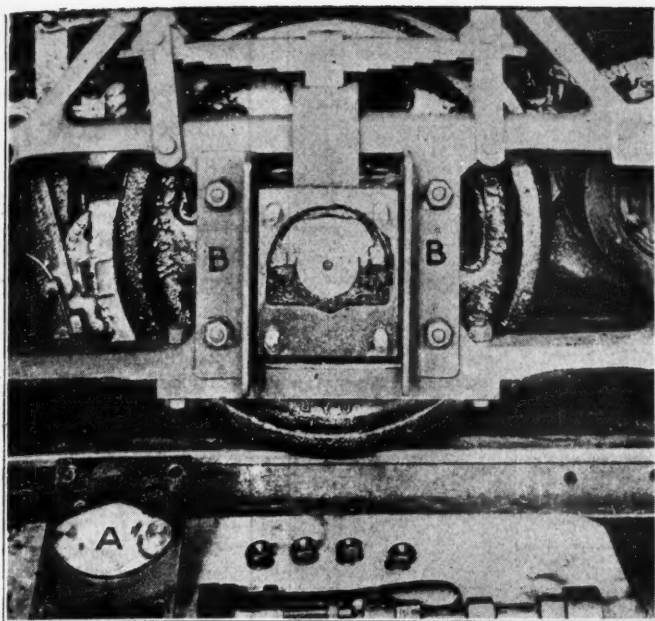


FIG. 4. JOURNAL BOX AND PROTECTING ANGLE IRONS

End thrust is taken on the journal-box lid (A), which is securely bolted in place. Heavy external angle irons (B) protect this box cover from injury by obstacles along the track. All parts are readily removable.

action and decidedly improves the tracking qualities of the machine. An equalizer has been proposed for two-motor locomotives and is being used by one manufacturer. As will be shown later, equalizers are of appreciable value on three-motor locomotives, but are of questionable utility when used in connection with one having only two motors.

End thrust has been taken in the past by the outside

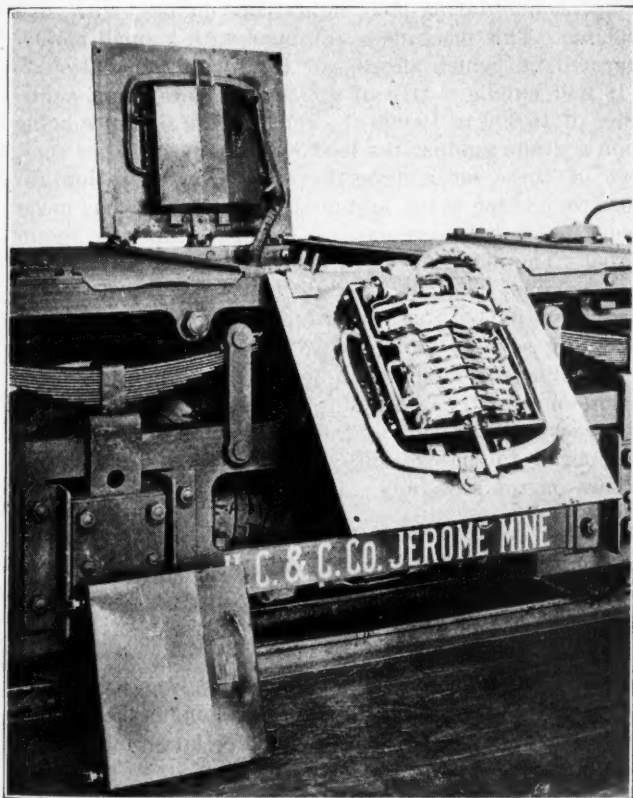


FIG. 5. REVERSERS OF LOCOMOTIVE IN FIG. 6

Little further advance can be made so far as accessibility is concerned. Electrical apparatus is far more accessible than it ever could be with a drum controller.

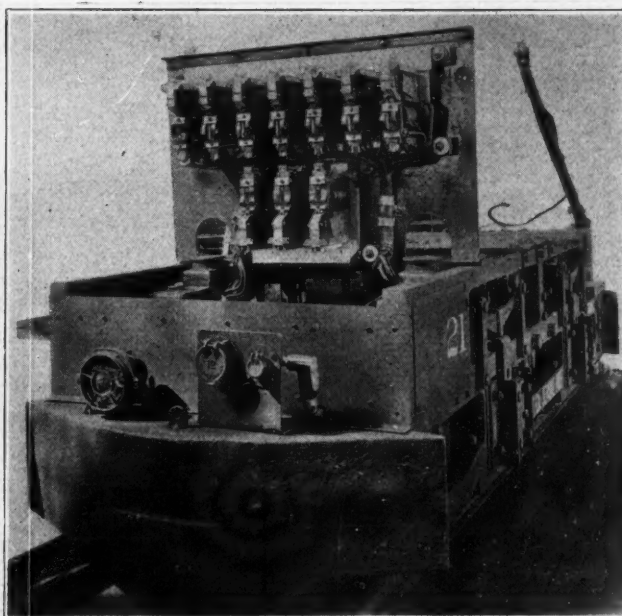


FIG. 6. MAIN CONTROL OF A 13-TON LOCOMOTIVE

Lifting a cover plate gives access to the entire apparatus. This locomotive is used at the Jerome mine of the Hillman Coal & Coke Co. and is one of the tandem locomotives in the front-piece.

of the wheel hub. This hub has been rather expensive to keep up and troublesome to lubricate. The type of box recently developed takes the end thrust on the inside

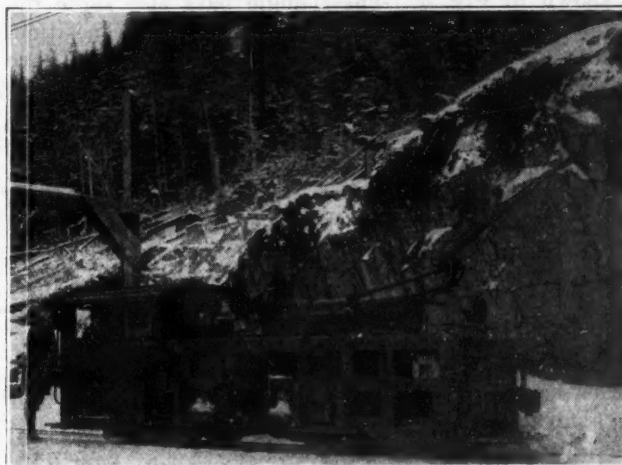


FIG. 7. AN UNUSUALLY "SPECIAL" MINE LOCOMOTIVE

A cab is here provided as well as air brakes and a trolley device that adapts itself to decided lateral variations in the position of the wire.

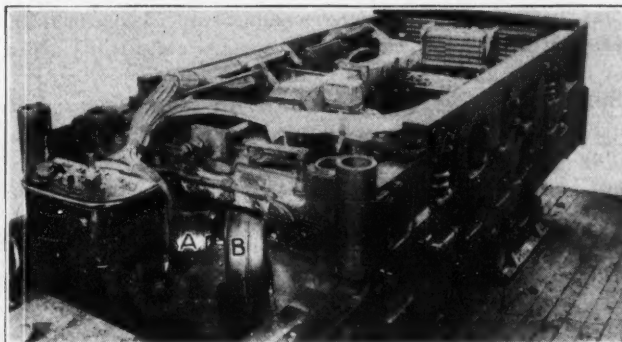


FIG. 8. ARTIFICIAL VENTILATION OF MOTOR

A small independent motor (A) driving a centrifugal fan (B) continuously pumps air through the motors, thus assuring effective cooling and consequent increased continuous haulage effort of the locomotive.

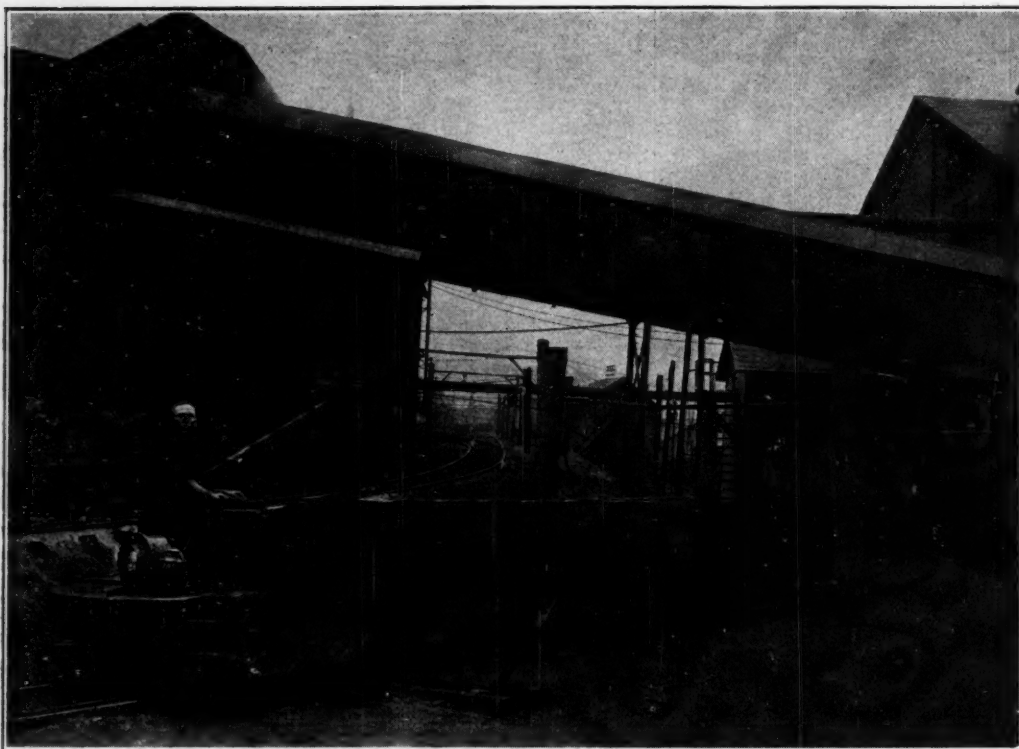


FIG. 9

### Largest Mine Locomotive

This machine, which is operated by the Berwind-White Coal Mining Co., weighs 35 tons; the track gage is 36 in. and the over-all height about 48 in. Three 85-hp. commutating-pole ball-bearing motors are employed. They are kept so cool by a ventilating fan that the locomotive is enabled to haul 100 cars up a grade exceeding 3 per cent, where otherwise 70 cars would be limit.

of the journal-box lid. These lids are sometimes knocked off by obstructions along the roadway. For this reason heavy angle bars have been adopted for their protection, as shown in Fig. 4. These angle bars also serve the purpose of holding the main journal box in position. Details of construction and method of removal have already been shown on page 167 of the issue of July 22, 1920.

This method of receiving end thrust is far superior to the older scheme of resisting it by the wheel hub. A hardened plate is welded to the inside surface of the journal-box lid and with adequate lubrication by a method that excludes all dirt and grit the upkeep on this type of journal box is low and its renewal is simple.

#### STEEL WHEELS REPLACING THOSE OF CAST IRON

Cast-iron wheels are still used to some extent, but the majority of locomotive users are specifying steel wheels or steel-tired wheels, largely because with them about 25 per cent better traction is obtained. A wheel with a detachable rim has been proposed, but as most locomotives sold have outside frames, a quick change of the rims would be difficult to accomplish. Moreover, it has been found that where such rims have been in operation for some time under mine conditions they rust in place and become difficult to remove.

Split gears have been standard for many years, but the advantages of the solid gear are so great that a strong tendency has developed to standardize on this type. Solid gears are advantageous because they are not likely to become loose. The gear can be heat-treated, increasing its life to two or three times that of the split gear. With heat-treated pinions and solid heat-treated gears upkeep can be greatly reduced and continuity of service largely increased over that obtained with the ordinary pinion and split gear.

Where more capacity is desired than can be obtained on two axles because of gage and height limitations a three-axle locomotive sometimes is used. The middle

driver in such a machine has no flange and so can be used where the track has a relatively small radius of curvature.

Fig. 9 illustrates a 35-ton three-motor locomotive at an operation of the Berwind-White Coal Mining Co. This is the largest single mine locomotive ever built and is operated on a 36-in. gage and has an over-all height of about 48 in. The motor equipment consists of three 85-hp. commutating-pole mine-type motors with ball bearings. This machine is equipped with a small motor-operated fan which affords air for forced ventilation.

It will handle a trip of 100 loaded cars from a distance of 16,000 to 19,000 ft., much of the distance being upon a grade against the load which exceeds 3 per cent. Two of these locomotives have been in operation for more than three years, and during this time it has never been necessary to remove a motor or open a motor frame. The motors are still operating with the original brushes and original bearings. Without the use of forced ventilation these machines could not handle trips exceeding seventy cars.

This illustration shows in detail the method of equalization employed. Two motors are equalized on the side with cross equalization on the third motor. This scheme is superior to the ordinary one of equalizing the three motors on the side only.

#### USING TANDEM LOCOMOTIVES KEEPS DOWN SIZE

Where it is not possible to obtain sufficient capacity on two or three axles, tandem locomotives are used, requiring only one operator for both units. A number of such machines have been built in the past using a four-motor drum controller on the leading locomotive and a two-motor type of drum controller on the secondary unit. This equipment requires a large number of cables connecting the two elements.

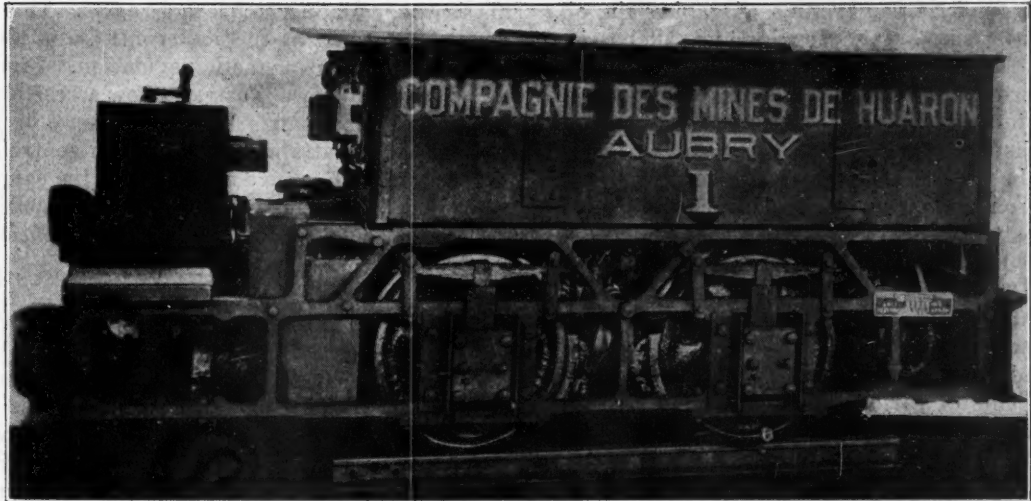
Recently a new type of tandem locomotive has been put out by the Westinghouse company with greatly simplified connections between the machines as well as the entire control system. By this means it is possible



FIG. 10

### Battery Locomotive

This machine is fitted with light outside bar-steel frames and leaf suspension springs. The storage battery is mounted above the frame at the expense of head room.



to utilize larger locomotives without running into cumbersome equipment. The control is of the magnet type and requires one trolley jumper and nine small control wires between units. Both machines are exactly alike and can be used separately or connected, either unit being a primary. This type of locomotive is illustrated in the frontispiece, depicting the latest practice in tandem-locomotive operation.

### COMMUTATING POLE REDUCES SPARKING

Under certain conditions it becomes impossible to install motors of sufficient capacity to withstand the severe heating developed in main haulage. This is especially true where long hauls up heavy grades are encountered. To meet this condition a scheme has been developed wherein forced ventilation is applied to the motors as illustrated in Fig. 8. This simple arrangement greatly increases the continuous capacity of the motors and will not only largely increase the power of the locomotive but will decidedly decrease the upkeep. This scheme can be applied only where the motors are designed with openings sufficiently large to take advantage of the forced ventilation. The Berwind-White Coal Mining Co. for several years has been using this system with entire success on 25- to 35-ton locomotives.

At the time when the new locomotive frames were designed a new line of motors was brought out which embodied all the latest features in railway practice. Advantage was taken of the vast amount of experience gained in the electric-railway field, and as railway engineers were designing the mine equipment, the latest and best railway practice was utilized in the planning of the new mine motors. These new motors include the well-known commutating pole, which enables the motor to commutate all loads without injurious sparking.

This was a decided step forward, as most of the trouble occurring in a mine motor starts with poor commutation. Babbitt bearings with grease lubrication were changed to sleeve-type bronze bearings with waste lubrication, which is the standard type of bearing for the railway motor of today and is preferred by many mine operators to the ball bearing.

The ball bearing was introduced a little later and has proved a great success when properly installed and cared for. Any bearing requires regular inspection and oiling, and if neglected will give trouble. Should there be an accident, however, the ball bearing is more expensive to replace than any other. The motor-axle bearing also was redesigned and is now of the bronze type with oil and waste lubrication. Both varieties of bearings

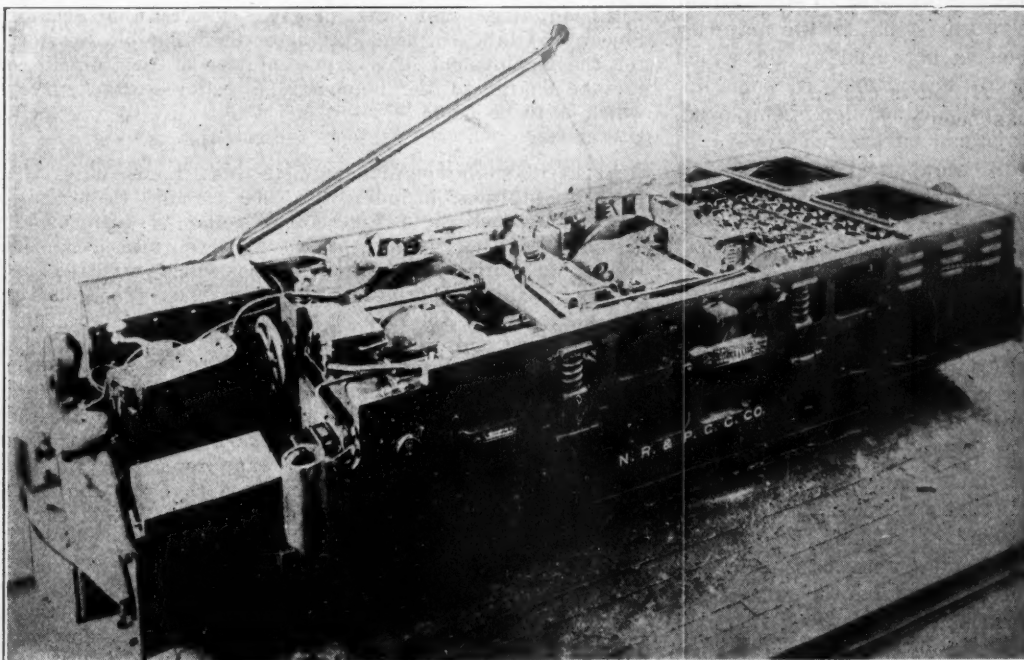


FIG. 11

### Battery Locomotive for Low Coal

Placing the accumulator between the frames, as is done in this case, limits the capacity of the locomotive. However, this cannot be avoided if headroom is not available.

provide a ready means of gaging the oil. This is the most successful type of motor-axle bearing in use today.

Motor windings, commutator and general design were greatly improved. A spring was added to the suspension rod to cushion the effect of the motor weight and dispose of vibrations which might be communicated to the motor. The resistance used was changed from cast iron to a nickel iron, rendering the grids less brittle and better able to withstand vibration.

Little change has been made in the drum controller used on locomotives up to thirteen tons with the exception that a series-parallel type is being employed to some extent and dynamic braking is being improved. In addition to the above fundamental changes, improvements of various kinds are being constantly added, and actual mine conditions are being continually studied with the object of bringing out new designs that will more nearly meet actual requirements.

Locomotive designers have some difficulty in meeting the problems arising out of the multiplicity of gages. These start at 18 in. and vary in some cases by a fraction of an inch to the railroad standard of 4 ft. 8½ in. Motors for excessively narrow locomotives are difficult to design and expensive to build. They are necessarily narrow and of large diameter and for this reason are said to be of the "pancake" type. In addition to the many gages there is a wide range in weight, width and height that makes it necessary to build a great variety of types.

Mine locomotives can be divided into two general classes—main haulage and gathering. For main haulage work the electric locomotive in most cases has no competitor. For gathering, the time-honored mule under certain conditions will give the electric locomotive or any other type of mechanical device close competition. Some mines use 500 volts for mine haulage, but the majority of locomotives are built for operation on a 250-volt direct-current circuit.

#### MOTORMEN FAIL TO USE SERIES POSITION

Main-haulage locomotives range in weight from eight to thirty-five tons, the larger sizes often being equipped with three motors. Until recently the standard method of control was the series-and-parallel type of drum controller. This device enables the operator to start either in series or parallel. The result is that in the majority of cases the series position is not used at all, which somewhat affects economy of operation. In some instances the series-parallel type of controller is employed, in which case the motors must be started always in series. This proves a more economical controller but some object to it because in certain cases as heavy a load cannot be started in series as in parallel.

For locomotives larger than fifteen tons and for tandem operation on machines where the individual unit weighs thirteen tons or more, magnetic or pneumatic control is becoming popular. For single locomotive operation with machines exceeding fifteen tons in weight and using 250-volt service the drum controller becomes large in size and difficult to manipulate from a physical standpoint. For 500-volt service and drum-type controllers the locomotive sizes can be much larger, as the current on 500 volts is only one-half that reached with 250 volts.

Magnetic or pneumatic control is operated from a small master controller, and the switches can be so distributed that the safety of the operator is greatly increased. The control apparatus can be placed to much better advantage and can be made far more accessible

for inspection and repair. This is illustrated in Fig. 6, showing the main control of a 13-ton locomotive equipped with magnetic regulation. Fig. 5 shows the reversers and also illustrates how accessible they are for inspection or repair. Such convenience of access could not possibly be attained with a drum controller.

For tandem operation the control is greatly simplified, as a small master controller will be placed on each unit, all of which will be made identical one with the other.

#### STORAGE-BATTERY VERSUS REEL LOCOMOTIVES

The storage-battery locomotive has proved quite successful for gathering purposes, but great care should be exercised in the adoption of this machine, as many misapplications have been made as well as a large number of applications where the trolley type of machine fitted with a gathering reel is much superior. Where the grades are not heavy and hauls are short the storage battery in many cases can prove its superiority.

An accurate study, however, should be made of each case before attempting to install the storage-battery gathering locomotive. Fig. 10 illustrates an accumulator locomotive for mine service fitted with bar-steel frames and the latest type of leaf suspension spring and thrust type of journal boxes. Fig. 11 shows a low-height type of storage-battery locomotive. Where, as in this case, the accumulator is between the frames it is difficult to obtain large battery capacity. Much greater duty can be obtained if the batteries are located on the top of the frame.

It is sometimes necessary to build special types of locomotives to meet abnormal conditions. Fig. 7 shows a 15-ton locomotive with cab on one end, air-brake equipment and a special type of trolley to take care of a large lateral variation in the position of the trolley wire.

THE SMOOT-REAVIS RESOLUTION, providing for a survey of the executive departments of the Federal Government, has become a law without the signature of the President. The statutory ten-day period passed without the measure's having been vetoed and it became a law automatically. An incident of the legislation was the loss of the bill in the White House offices. Opinion is divided as to whether the President would have vetoed the measure had it been brought to his attention. A joint Congressional committee will be organized under the bill. It is expected that Senator Smoot, of Utah, will head the committee. The bill provides for the employment of a representative of the committee to take charge of the immediate direction of the survey which is to be made.

APPROPRIATIONS FOR SPECIAL COAL WORK requested by the Bureau of Mines, including \$725,000 for the Federal inspection of fuel and \$75,000 for selection of fuel for all Government uses, except the Navy, were refused by the House Committee on Appropriations which reported the sundry civil appropriation bill Dec. 29. The bureau had asked for \$3,469,638 for the next year, but the committee allows only \$1,357,300, which, however, is \$54,658 more than the current appropriation. For fuel and other supplies for public buildings \$2,500,000 is provided, and the Treasury Department is authorized to contract for the purchase of fuel for public buildings under its control in advance of the availability of the appropriation for the payment therefor, with the stipulation that the contracts shall not exceed the necessities of the current fiscal year.

THE ATLANTIC COAST LINE RAILROAD CO. has asked authority of the Interstate Commerce Commission to issue notes for the purchase of 400 all-steel hopper bottom coal cars.



# Why Does the Roof of the "B" Seam Develop Heavy Falls in Narrow Work?

Under Certain Conditions the Roof of the Miller Seam Falls Suddenly and Without Warning—A Weak Roof Containing Pronounced Joint Planes and Overlaid with a Thick Readily Shifting Clay Appears To Be the Cause of These Falls—Open Mine Intensively or Drive a Wide Caving Heading Parallel to Entries If You Would Avoid Trouble

BY ALFRED E. ROBERTS†  
Ebensburg, Pa.

**N**OWHERE are more peculiar roof conditions to be contended with than in the working of the Miller or "B" seam. Over a large area the Miller bed shows marked uniformity. A section of the roof, as I have observed it, would be roughly as follows: One to two feet of dark hard slate showing little or no tendency to part along bedding planes; above this a softer grayish shale interspersed with bands of dense sand-rock, often exhibiting a lenticular tendency and varying from a few feet to a bed of great thickness; above this a hard grayish fireclay exhibiting no tendency or only a slight disposition toward bedding and falling out in rude lenticular masses. The thickness of this clay may vary from a few feet to many feet. This material apparently is high in silica and it probably merges into a bed of sandy shale, for such a deposit has been reported in near-by areas. At other places it may finally grade into sandrock.

After deposition of the covering of the coal bed the whole region was elevated and gently folded. This elevation and folding resulted in the formation of remarkable joint planes. These are highly developed and show great persistency and parallelism in any given locality. When the side of a joint is exposed, it exhibits a remarkably smooth surface, resembling a slickenside, as if through oscillation the opposing faces had polished one another. This similarity to a slickenside is heightened by the material which is found deposited in the joint and which comes without doubt from the fireclay above. In no other coal-mining region have I seen such highly developed joint planes in the roof. As will be shown later, this characteristic, after mining operations are started in the coal bed, has an important bearing on the action of the roof.

## ROOF IN NARROW ROAD FALLS WITHOUT WARNING

I have myself observed several peculiar falls of roof and some that were equally strange have been described to me by competent and thoroughly reliable mining

men. One of the first of these incidents and one which came under my direct observation occurred in a room heading. In the first few hundred feet of this roadway, top rock was shot to make height. The roof gave much trouble and had to be brushed so often that it was decided to shoot the bottom and leave the top undisturbed. The heading was driven in this manner for a distance of 500 ft. and slightly widened to permit the gobbing of the bottom rock. To all appearances the roof was good. It sounded perfectly solid and gave no indications of getting heavy, though it was posted sufficiently to allow such indications to become apparent. At half-past three the day shift left this heading in apparently normal condition. The men on the

night shift who were working in it have since said that there was no apparent indication of a break until the roof suddenly fell. The night foreman at 4 p.m. reported this heading closed with fallen roof to a depth of over 10 ft. for a distance of nearly 300 ft. from the face.

## ONE FALL BEGINS WHERE OTHER FALL ENDED

In the second case main and back headings were driven, and the roof shot in each sufficiently to permit of haulage. Little or no trouble had been experienced with the roof when, without apparent warning, it fell in the back heading, starting from a point within a few feet of the face and extending approximately 250 ft. outby. These headings were then abandoned temporarily, remaining in this condition for several months. Again, without apparent warning, the roof in the main heading, beginning at a point near the junction with a cross heading, gave way and fell to a point nearly opposite the outby end of the fall in the back heading.

Some of the details considered important in connection with these two incidents might be singled out. First, both pairs of headings had been driven at an acute angle with the joint planes in the roof. Second, both pairs of headings had been driven into the solid a long distance without any other opening having been turned from them. Third, in the case of the second occurrence the fall in the main heading terminated opposite the end of the fall in the back heading and traveled in a different direction.

In the discussion of this paper Joseph Williams, then president of the Coal Mining Institute of America, offered another solution of this problem of roof failure in narrow work. He believed it to arise from hydraulic pressure. No great volume of water would be needed; only free access from the surface and enough water to extend thereto and give the required head. The coal in the region where the conditions described were found is 200 to 800 ft. deep and it lies at a moderate gradient.

\*Abstract of paper presented before the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 9, 1920, entitled "Some Peculiar Roof Conditions Encountered in the Central Pennsylvania Bituminous Field."

†Superintendent Monroe Coal Mining Co.

The peculiar incidents now to be related were told me by men who have had long experience in the working of the Miller seam. A room heading from which sixteen rooms had been turned, suddenly and with only slight warning caved for a considerable distance. The warning was sufficient in this case to enable the men working in this section to escape. In another instance a room heading that had been driven for a long distance without having any rooms turned from it caved apparently without warning. This heading had been examined and found in normal condition on Saturday, but on Monday morning it was found to be almost entirely closed from a fall.

#### SOME OF THE THEORIES TO EXPLAIN FALLS

Many such occurrences could possibly be related were I familiar with the entire field. The foregoing, however, are sufficient to establish the existence of a distinct mining problem, the correct solution of which can be found only by the collection of all available facts.

Many theories are held by men experienced in operating the Miller seam regarding this tendency in the roof to break unexpectedly or to become bad and require much attention. These theories are interesting, but they are based on erroneous ideas. Some of the prevailing ones may be set forth as follows:

(1) That roof falls are caused by accumulations of gas under sufficiently high pressure to rupture the rock.

(2) That the falls are attributable to the hard bottom which is found in several areas underlying the coal. This theory assumes that where soft bottom exists, redistribution of the weight of overburden made necessary by excavation of some of its support forces the pillars into the bottom until adjustment has taken place and that where a hard bottom exists this adjustment must be made in the roof. This results in sufficient disturbance to cause enormous falls.

(3) That some limelike substance occurs in the rock, which on exposure to air slacks, breaking up the rock. This theory has arisen without doubt from the appearance of what is called a "cutter," a rather irregular grayish line which forms in the roof, indicating the development of a break therein. This cutter develops, according to my experience, more readily in a roof that has been shot for height than in one which has been left undisturbed.

(4) That falls result from exposure of the rock to the air, without any other qualifying reasons. Certain objections exist to all the above theories, as will be pointed out, though much evidence apparently tends to support them all.

#### WHERE ALL FORMER THEORIES APPEAR TO FAIL

The first theory, that gas was the cause, was advanced to explain the occurrence first narrated. I am inclined to deny that gas was the cause of this roof failure or of others I have noted, for the reason that no gas was detected immediately after, or in fact at any time after, the occurrence, though a constant lookout was maintained for it. This statement applies to inert as well as to explosive gases. In no instance of the kind have I learned that large volumes of gas were detected after sudden falls of the roof above the Miller seam.

The second theory is supported by the fact that many falls have occurred where hard bottom exists.

But that may be only a coincidence and not a cause. Other factors having a highly important bearing on results may have been overlooked. In this connection and as previously pointed out, the roof may have contained highly developed joint planes, and it readily can be seen that if the openings were driven so that their direction formed an acute angle with these planes, the roof between two such joints might be considered as a beam the length of which is increased with the acuteness of this angle. If this beam is considered as being uniformly loaded, its tendency to rupture is increased by a corresponding increase in length. In all cases of failure encountered, I have observed that the angle formed between the joints and the direction of the heading was quite acute.

#### WHAT HARD-BOTTOM THEORIES WOULD ASSERT

Another objection may be raised to the second theory, which assumes that an adjustment of the weight of the overburden takes place in the softer bottom. In few words this theory asserts that a certain initial load per square foot rests upon the bottom rock. Excavation removes support from a portion of the roof, the weight of which is transferred to the pillars remaining. The original bottom, unable to sustain this, is compressed until equilibrium is attained. If the bottom is hard, this adjustment takes place in the roof, resulting in falls.

The main objection to the theory based on the adjustment on the top that should take place in the bottom is the fact that no more heaving or creeping is observed when the bottom is soft than when it is hard, nor is it my belief that any such movement usually takes place, as actions of this nature are likely to be noted and anticipated. The bottom has been observed to heave under both conditions.

The third theory presupposes the existence of some limelike substance in the roof, the exposure of which to the air causes the rock to slacken and swell, creating sufficient pressure to break the roof.

The only effect the mine atmosphere coming in contact with the roof could have would be to supply moisture, oxygen or nitrogen. In just what mysterious way the mine air could penetrate and react upon the roof throughout any considerable thickness of rock remains unexplained. Neither is it clear how a limelike substance could remain for ages in so unstable a state.

#### WHY HAS LIME DELAYED DELIQUESCENCE?

Much evidence appears to disprove the assumption that it could. The material forming the roof we know was laid down under water, and in all rocks such as these under discussion a certain amount of moisture always is present. Subsequent heat developed through folding has hardly been sufficient to calcine any such mineral material.

It is well known that certain rocks swell on exposure to air. This has been demonstrated repeatedly in the sinking of shafts. Whether the swelling is caused by some change in the constitution of the rocks or is only apparent and in reality is the result of exudation of more or less mobile material under the influence of pressure has, as far as I know, not been made clear.

The fourth theory advances the old idea that the bad roof conditions are caused by the action of air on the rock. I have heard that argument from my boyhood days—from the beginning of my mining experience



as a door boy in the anthracite region. Usually this statement is made with all the assurance born of ignorance and with all seriousness. It is one of the many fallacious reasons given as the cause of many incomprehensible phenomena encountered in mining—believed in by many and really investigated by few.

#### IF AIR ROTS ROOF EFFECT MUST BE SEASONAL

We all know from experience that during the summer months the cooling effect of a mine contracts the air as it enters. This results in the deposition of part of its moisture content. In the winter the cool air entering the mine is warmed, expands and takes up moisture. If the air were responsible for bad roof conditions we should naturally look for seasonal disturbances, whether the cause arose from absorption or loss of moisture or from contraction or expansion of rock because of cold or heat. The disturbance from the latter cause would be highly localized. But no such seasonal weakness exhibits itself.

The above theory seems to be supported to some extent in the case of the Miller seam because of the presence of the cutters already referred to. These cutters herald the approach of a break in the roof and are regarded as marking a point in it weakened by contact with air, this idea being supported by the apparently disintegrated material along the line of the cutter. I am forced to believe, however, that this condition is resultant upon incipient stages of breaking and not antecedent to them.

It might be mentioned in connection with the disintegration of the roof that when this material is sent outside to the spoil bank rapid disintegration takes place and in a week or two large lumps can be kicked to pieces with ease. It has always been a matter of speculation to me why this disintegration takes place only slowly in the mines. Observation has failed, however, to reveal the reason.

#### EXTRUSIVE CLAY CAUSE OF THESE ROOF FALLS

In my opinion, the chief cause of bad roof in certain sections of the Miller seam and the extensive falls that occur in them, sometimes quite suddenly, is the large body of fireclay above the coal bed and the pressure of the overburden acting upon it.

This thick bed of fireclay can be imagined as being under certain conditions more or less mobile because of the rude lenticular structure of the masses of fireclay composing it. This mobility may well become more pronounced in the presence of water. When an opening is driven in the bed, the coal support under the area so mined is removed and the weight formerly supported by this coal is transferred to the surrounding pillars. It is natural to suppose that this weight in large measure falls on an area of the pillar close to the opening.

The mobility of the fireclay tends to keep this pressure evenly distributed much as it would if a fluid body replaced the deposit. This tendency to distribute the weight evenly causes a pressure to be maintained over the excavation comparable with that over the pillars. The unsupported roof naturally responds by giving way if the stress becomes sufficiently great.

The analogy between the clay bed and a fluid body fails, however, at one point, for the fireclay mass is able to adjust itself to the new conditions of pressure and come to equilibrium. This occurs when the pressure on the mass of clay above the pillar is no longer able to disturb or displace any part of it.

Under what conditions will the clay break the roof gradually or suddenly? Reviewing the geological characteristics of the roof it is found that the measures lying immediately above the coal are the strongest, as they are made up of homogeneous slate and layers of hard sandstone. This material will withstand enormous pressures but does not appear to be of an elastic character such as would permit of appreciable bending, hence it breaks suddenly.

Immediately above this comes the more highly stratified slate, which is of much less strength. Where the top has not been shot the gradually increasing pressure exerted by the extended fireclay may become so great that the roof will not sustain it. This is more likely to occur where the direction of the heading makes an acute angle or where water is present to accentuate the action of pressure on the fireclay. Where the top has been shot and brushed for height, the roof is weakened correspondingly and cannot resist the gradually increasing pressure. This results in successive falls until the movement has ceased.

#### METHODS ADOPTED TO PROTECT ENTRIES

Several methods favored by men with years of experience in working the Miller seam seem to justify the theory just enumerated and they may now be recounted. Where the roof tends to be bad and unexpected falls are encountered, experienced men advocate that an additional and comparatively wide opening be driven near by when headings are driven in the solid. This opening can be allowed to cave so as to relieve the pressure over the other openings. This plan, I understand, has been adopted with some success and it has been found that over a limited territory adjacent to the caved opening the roof does not tend to break.

Another of the ideas largely held by mining men is that if sufficient area is opened up as development progresses the roof will have sufficient elasticity to overcome the excess pressure placed upon it. This idea may be explained by the familiar example of the automobile tire and the inner tube. Where the tire is weakened, the pressure on the inner tube forces out the weakened spot until the tension in the fabric is sufficiently great to balance the pressure within. Why does this pressure which tends to break the roof in a restricted area have a less tendency to break it in a wider area?

Simply because the analogy of likening the clay bed to a fluid is not complete and only a small percentage of the actual transfer of weight is made to the roof of the excavation in the form of pressure. Thus in the wider opening, with a greater tendency toward elasticity, the corresponding pressure will be less per unit of area than in the narrow and more constricted opening. It has been my personal observation that those who went on the principle of intensive development were successful in avoiding much trouble.

#### FOUR CONCLUSIONS DERIVED FROM OBSERVATION

The following observations have convinced me of the soundness of some of the ideas here set forth:

- (1) Falls tend to terminate in one heading opposite the beginning of a fall in an adjacent parallel heading.
- (2) In any opening turned at right angles to one in which acute roof disturbances have occurred the roof tends to remain undisturbed. Inquiry will show that the latter opening has been driven at an unfavorable angle with the joint planes.

(3) The roof is free from disturbance in openings driven parallel to others in which roof trouble has been acute.

(4) By developing simultaneously all the workings which are planned for the area the management of a mine may be practically relieved from roof difficulties in an area formerly mined only with difficulty.

#### REMEDIES FOR ROOF COLLAPSE IN NARROW WORK

Having arrived at the above conclusions regarding the characteristics of the roof of the Miller bed, the remedies proposed are as follows:

If conditions permit, drive most of the openings as nearly at right angles to the joint planes as possible. If this is done, some of the openings must of necessity, where a rectangular system of development is

followed, be driven at an acute angle with the joint planes. If these are room headings, turn off the rooms as distance is reached and open them up to an appreciable depth.

Too rapid driving into solid coal should be avoided. In the case of main heading I would drive multiple openings. There should be several small openings rather than a few wide places, unless the decision is reached to drive a caving heading. In such a case this should be driven wide.

It is my belief that the most abnormal roof disturbances in the Miller seam upon investigation will be found to have occurred in openings driven at an acute angle with the joint planes, in passages driven in the solid without the proper number of additional openings and in places where the roof has been disturbed by shots.

## The Fuel Supply of the World\*

Fuel Is a Basic Necessity—The World Now Largely Depends Upon Coal for Its Heat—Petroleum, Natural Gas, Wood, Etc., Also Are Burned, but as Their Supply Is Diminishing the Time Is Ripe for Co-operation in Fuel Conservation

BY L. P. BRECKENRIDGE†  
New Haven, Conn.

**F**OOD and fuel are basic necessities of present-day existence. Here in America as recently as one hundred years ago men were selecting places in which to live where food could easily be produced and where wood was near by for fuel and for the building of homes. Up to 1820 fuel was needed primarily for cooking food and for keeping warm. At that time power was produced by wind for propelling vessels and by falling water for the gristmill, sawmill, cotton mill, woolen mill and forge.

It was not until 1859 that Drake discovered petroleum, and if all the petroleum produced in the United States since that time had been burned for fuel it would replace our coal production for only the last two years.

The total amount of coal mined in the United States up to the end of the year 1840 was only 12,000,000 tons, an amount which is now produced in six working days. In fact the total coal mined up to the end of 1880 was no more than 1,000,000,000 tons, an amount now produced in twenty months.

Natural gas was first used for domestic fuel in 1821 and for manufacturing purposes in 1863. It has been a valuable fuel for domestic and industrial use in the areas where it has been available. It has been used wastefully and its diminishing supply is to be regretted.

In 1820 the center of population of the United States was not far from Washington, the national capital. Today it is about 130 miles southeast of Chicago and near the Illinois-Indiana state line. One hundred years ago no locomotive had been run in America and the fuel used for producing power was negligible. Today food is no longer produced near the consumer and fuel is an

essential for its transportation, its preservation and increasingly for its production. Our population of 106,000,000 is widely separated and more than half the people now live in the cities. Food must be brought to the urban dweller and manufactured products must be taken to the people on the farms.

Fifty years ago (1870) the total coal production of the United States was less than one ton per capita (0.96). Today it is slightly more than six tons. This great increase is accounted for primarily by our growth as a manufacturing nation, involving great increases in the requirements for transportation, but to this must be added the evident fact that we have surrounded ourselves with many comforts, then unknown, as well as luxuries which still are never found in many foreign countries. We have wonderfully advanced our standards of living. The people of the United States (106,000,000) constitute only a small percentage of the population of the world, yet we consume more than half (52 per cent) of the coal used each year, and over two-thirds of the petroleum production of the world.

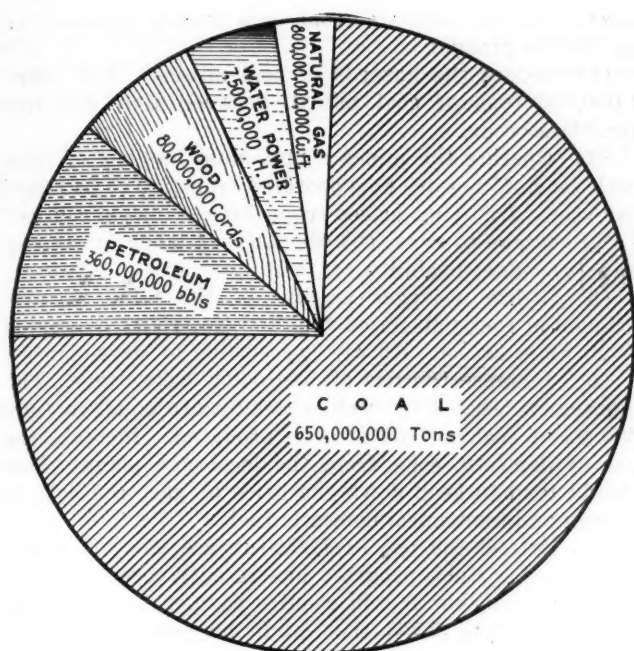
We are rich indeed in fuel but our wealth of heat-producing resources should not make us wasteful of them, for they are a world need and one which when once exhausted may never be replaced. It is hoped that a study of the facts presented in the accompanying tables will serve to emphasize the larger problems of fuel as related to their place of production, extent of exhaustion, methods of transportation, and especially their methods of use, pointing—as all the facts do—to the great necessity for co-operation for conservation.

The importance that fuel has assumed during the last five years has been recognized by the U. S. Geological Survey and the Bureau of Mines, with the result that the former has collected and distributed much valuable information relating to the production and distribution

\*Abstract of paper presented before the Fuel Section of the American Society of Mechanical Engineers, New York, Dec. 7, 1920.

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FUEL CONSUMPTION OF THE UNITED STATES

This chart is drawn to the scale of tons of coal. Thus the petroleum, wood, water power and natural gas are each given the arc of the circle equivalent to their fuel values in tons of coal. The predominating dependence we place in solid mineral fuel is here strikingly portrayed.

of fuels, while the latter has investigated many problems relating to safety in mining and the storage and economical use of fuels for both domestic and industrial use. Such service as these bureaus have furnished must be given high praise. It is only when the facts are collected with care that any intelligent plan for bettering conditions can be proposed and carried out. All those interested should obtain for the asking the publications of these bureaus and should urge and aid suitable congressional appropriations for extending their important work.

It has been the aim of this paper to select from the mass of available material such facts as relate to four significant items, namely: (a) The location of the world's fuel reserves, (b) the present estimate of the amount of fuel in the earth, (c) the relative production of fuel by the different countries and by different states in the United States, and (d) the use made of the fuel produced.

#### SHOULD SOLVE FUEL PROBLEMS AS A WHOLE

The time has come when the fuel problems of the world must be given consideration in a large way. Communication or transportation has made all countries of the world near neighbors. Food and fuel are essential to the world's life and progress. The United States now for the first time in many decades has cargo vessels. It will fail in its duty to the world if it does not make wise use of its resources and its facilities to aid the various peoples of the earth. If your neighbor likes you he will do you no harm.

The title of each of the accompanying tables is sufficient to indicate its import. War conditions have made many temporary disturbances in statistics of this character and for this reason it has seemed wise in some cases to choose pre-war conditions where it is simply the trend of progress that it is desired to indicate.

The difficulty experienced in obtaining a supply of coal coupled with the high price paid for it has in itself

TABLE I. TOTAL COAL RESERVE OF THE WORLD<sup>1</sup>  
(In Millions of Tons)

EASTERN HEMISPHERE	
Europe	
Germany.....	423,356
Great Britain and Ireland.....	189,533
Russia (in Europe).....	60,106
Austria.....	53,876
France.....	17,583
Belgium.....	11,000
All others.....	28,736
Total for Europe.....	784,190
Asia	
China.....	995,587
Siberia.....	173,879
India.....	79,001
Indo-China.....	20,002
Japan.....	7,970
All others.....	3,147
Total for Asia.....	1,279,586
Africa	
South Africa.....	56,200
All others.....	1,639
Total for Africa.....	57,839
Oceania	
Australia.....	165,572
New Zealand.....	3,386
All other islands.....	1,452
Total for Oceania.....	170,410
Total for Eastern Hemisphere.....	2,292,025
WESTERN HEMISPHERE <sup>2</sup>	
North America	
United States.....	3,838,657
Canada.....	1,234,269
All others (including Central America).....	505
Total for North America.....	5,073,431
South America	
Colombia.....	27,000
Chile.....	3,048
Peru.....	2,039
All others.....	10
Total for South America.....	32,097
Total for Western Hemisphere.....	5,105,528
Total reserve of the world.....	7,397,553

<sup>1</sup> Twelfth International Geological Congress, Canada, 1913.

brought about a desire to exercise all possible care in its use. The public at large more and more realizes the need of co-operation to assure conservation in some large way. It is in connection with the last plan, "Co-operation for Conservation," rather than in "Individual Thrift" that I see the most promising chance for initial success. Especially is this true as a wise first step.

Individual thrift should always be practiced, but the large savings of fuel that could be made by co-operation are far beyond anything that could be expected from individual effort. The suggestions for coal conservation which follow are not new—some of them are already

TABLE II. ANNUAL COAL PRODUCTION OF PRINCIPAL COUNTRIES OF THE WORLD (1865-1913)<sup>2</sup>

		(In Millions of Tons)											
Countries	1865	1870	1875	1880	1885	1890	1895	1900	1905	1910	1913		
United States	25	30	48	67	102	142	178	243	351	446	569		
Great Britain	100	112	135	149	162	185	194	229	240	264	321		
Germany.....	28	35	49	59	74	89	104	150	174	222	305		
Austria-Hungary.....	2	8	13	15	20	26	27	39	41	38	59		
France.....	12	13	17	19	20	26	28	33	36	39	45		
Russia.....	0.3	0.7	1	3	4	7	9	15	17	25	35		
Belgium.....	12	14	15	17	17	20	20	23	22	23	25		
Japan.....							5	7	12	15	23		
China.....											15		
Canada.....							3	5	8	13	13		
Other countries.....	3	5	7	10	13	18	14	22	28	43	...		
Totals.....	182.3	217.7	285	339	412	513	582	766	928	1,143	1,382		

<sup>2</sup> From statistics in Mineral Industry, N. Y.

TABLE III. COAL PRODUCING AND USING STATES IN 1915<sup>3</sup>

States	(In Millions of Tons)			
	Bituminous Producing	Using	Anthracite Producing	Using
Pennsylvania.....	158	66	89	23
West Virginia.....	77	6	..	3
Illinois.....	59	40	..	..
Ohio.....	22	22	..	..
Kentucky.....	21	5	..	..
Indiana.....	17	16	..	..
Alabama.....	15	8	..	..
Colorado.....	9	5	..	..
Virginia.....	8	4	..	..
Iowa.....	8	7	..	..
Kansas.....	7	..	..	..
Wyoming.....	5	..	..	..
Tennessee.....	6	..	..	..
New York.....	..	17	..	21
New England.....	..	21	..	14
New Jersey.....	..	8	..	8
Wisconsin.....	..	8	..	2
Minnesota.....	..	6	..	2
Maryland and D. of Columbia.....	..	..	..	2
Michigan.....	..	10	..	..
Missouri.....	..	8	..	..
All other states.....	29	37	..	5
Railroads.....	..	122	..	6
Exported.....	..	19	..	4

<sup>3</sup> Compiled by C. E. Leshner, U. S. Geological Survey.

begun—but it is only when the significance of all is fully realized that we shall be able to feel that we are really making satisfactory progress in preventing waste of fuel, as well as waste in the labor and capital that are required to produce and transport it.

Prevention of waste of coal may be accomplished in the following ways:

(1) Extend as rapidly as possible improved methods of mining coal. Under present conditions one-third of the bituminous and one-half of the anthracite coal is left in the mine where recovery is practically impossible.

(2) Extend improved methods of "preparation" of coal at the mines. A premium might advantageously be

allowed for well-prepared coal, or a penalty imposed for an impure product.

(3) Reduce the hazards of coal mining. For every 1,000,000 tons of coal mined, between four and five fatalities occur.

(4) Operate the mines a maximum number of days each year. Mines are now operated from 200 to 240 days per year. Lost time arises from three principal causes:

(a) Shortage of cars, (b) shortage of labor or strikes, and (c) mine disability.

(5) Utilize a larger amount of the mine waste—briquetted fuel, pulverized fuel and electricity generated from mine refuse. All are susceptible of development.

(6) Increase the use of byproduct coke ovens. The byproducts wasted by beehive coking are equal to fully 600 lb. of coal per ton of coke produced. Increase the use of domestic coke from the local gas plant. This should tend to keep down the price of gas, and coke is a clean and economical domestic fuel.

(7) Extend the use of blast-furnace gas for power generation. Much progress has recently been made in this direction, but it will require co-operative effort to utilize fully the power that might be made from blast-furnace gas.

#### MORE EXTENSIVE USE OF GAS ADVISED

(8) Extend the use of the gas producer, the gas engine and the heavy oil engine for power generation, more especially where electrical energy is not available. Develop the lignite fields—by power from gas producers and briquetted fuel for domestic use.

(9) Extend waterpower development. Hydro-electric power, in many instances combined with steam power, offers large possibilities for saving coal. It will require comprehensive expert study before any new development can be undertaken or satisfactory financial returns may not be possible. (It will be noted that the above nine suggestions relate to savings which are not concerned with burning coal for making steam or heating homes.)

(10) Extend generally the best-known performance of locomotives. The better locomotives of 1920 use only two-thirds of the coal required twenty years ago to do the same work. Much saving should be expected in the operation of steam locomotives. Electrification will save coal where water power is conveniently available. Instructions to firemen should be given and followed up even more carefully than in the past.<sup>5</sup>

(11) Encourage the tendency of the small industrial plant to purchase its power. The best coal is often sent to the small industrial consumer. Small plants, like individuals, should be examined by experts and all reasonable effort made to conserve fuel. Correct equipment and correct methods of operation would save 20 to 25 per cent of the coal used in industrial plants. It is the coal saved by the industries that will set free transportation facilities sorely needed for other purposes than hauling coal. One-third the railroad tonnage is coal.

(12) Furnish homes and public buildings with correct and simple instructions for operating the furnace, heating boiler and stove. This involves using fuel with suitable equipment for burning it. This should result in saving from 10 to 15 per cent of the domestic coal consumed.

<sup>5</sup>The author has overlooked lack of market as a cause of lost time. This was an important cause of non-operation of spot-coal mines in 1919.—EDITOR.

<sup>6</sup>See "The Economical Use of Coal in Railway Locomotives," Cir. No. 8, Engineering Experiment Station, University of Illinois, Urbana, Illinois. (Prepared by J. M. Snodgrass and others.)

TABLE IV. INDUSTRIES USING BITUMINOUS COAL IN THE UNITED STATES (1914)<sup>4</sup>

Industry:	Net Tons	Industry:	Net Tons
Coke.....	50,467,000	Woolen and worsted goods.....	1,544,000
Steel works.....	20,343,000	Oil, cottonseed, etc.....	1,232,000
Clay products.....	8,566,000	Leather.....	1,124,000
Cement.....	6,731,000	Zinc smelting and refining.....	1,066,000
Paper and woodpulp.....	6,268,000	Lumber products.....	885,000
Gas (heat and light).....	6,076,000	Sugar refining.....	875,000
Railroad shops.....	5,486,000	Copper smelting and refining.....	812,000
Cotton goods.....	3,579,000	Electrical machinery.....	769,000
Ice (mfg.).....	3,386,000	Paving materials.....	665,000
Foundry and machine shop.....	2,913,000	Glucose and starch.....	648,000
Meat packing.....	2,786,000	Pottery.....	577,000
Malt liquors.....	2,742,000	Agricultural implements.....	555,000
Chemicals.....	2,607,000	Wine.....	523,000
Glass.....	2,252,000	Soap.....	515,000
Petroleum, refining.....	2,045,000	Automobiles.....	464,000
Blast furnaces.....	1,892,000	Fertilizers.....	433,000
Flour and grist mill products.....	1,809,000		

<sup>4</sup> Bureau of Census.

TABLE V. PER CAPITA COAL CONSUMPTION OF THE UNITED STATES

(Total Coal)					
Year	Net Tons	Per Cent Increase	Year	Net Tons	Per Cent Increase
1870	0.96	..	1900	3.2	39.1
1880	1.4	45.8	1915	5.5	71.9
1890	2.3	64.1	1920	6.2	12.9

TABLE VI. COMPOSITION AND HEATING VALUES OF DIFFERENT RANKS OF COAL COMPUTED ON ASH-FREE BASIS<sup>5</sup>

Rank of Coal	Heating Value, B.t.u.	Fixed Carbon, per Cent	Volatility, per Cent	Moisture, per Cent
Anthracite.....	14,440	95.6	1.2	3.2
Semi-anthracite.....	14,880	83.8	10.2	6.0
High rank semi-bituminous.....	15,360	83.4	11.6	5.0
Low rank semi-bituminous.....	15,480	75.0	22.0	3.0
High rank bituminous.....	15,160	64.6	32.2	3.2
Medium rank bituminous.....	13,880	54.2	40.8	5.0
Low rank bituminous.....	12,880	47.0	41.4	11.6
Sub-bituminous.....	9,720	42.4	34.2	23.4
Lignite.....	7,400	37.8	18.8	43.4

<sup>5</sup> Campbell, U. S. Geological Survey.



TABLE VII. ONE YEAR'S FUEL REQUIREMENTS OF THE UNITED STATES AND ITS COAL EQUIVALENT\*

Kind of Fuel	One Year's Fuel Consumption	Approx. Coal Equivalent (Net Tons)	Conversion Factors
Peat.....	25,000 tons	12,500	2 tons = 1 ton coal
Natural gas...	800 billion cu. ft.	27,000,000	30,000 cu. ft. = 1 ton coal
Wood.....	80 million cords	40,000,000	2 cords = 1 ton coal
Water power..	7.5 million developed water horse power	55,000,000	33 per cent load factor 5 lb. coal per horse-power
Petroleum....	360 million bbls.	100,000,000	3.6 bbls. = 1 ton coal
Coal.....	650 million tons.....	650,000,000	.....
Total.....		872,012 500	

\* Calculated on a basis of 13,000 B.t.u. per pound.

(13) Extend the practice of placing coal in storage.<sup>a</sup>  
The conditions under which this can be safely performed

<sup>a</sup>See "The Storage of Bituminous Coal," by H. H. Stoek, Cir. No. 6, Engineering Experiment Station, University of Illinois, Urbana, Illinois.

are now available to the manufacturer, and now that we have learned how coal may be safely stored, the "load curve" on the mining industry should be greatly improved. Coal should be stored at or near its point of consumption.

(14) Extend electrification. The full use of electrical energy offers the most promising means of saving coal. Conservation by co-operation of water power, steam power and electricity opens large possibilities for saving coal, capital and labor. This is contemplated by the super-power plan now being investigated by the Department of the Interior (U. S. Geological Survey) and a report is in preparation by an engineering staff. This will set forth the facts as to: (a) Needs for super-power, (b) characteristics of an installation, (c) location of suitable super-power lines, (d) estimated costs, (e) estimated economies and other details.

## This Loader Runs on the Coal Bottom and Does Not Use the Mine Tracks\*

Machine Rams Itself Under the Coal To Be Loaded—Falling Coal Cannot Injure It—Conveyors Hold Three-Quarters of a Ton, Which Capacity Is Available if Car Supply Is Momentarily Delayed

BY G. F. DILLIG  
Pittsburgh, Pa.

**P**RODUCTION of coal under ground may be readily divided into three processes, viz.: breaking down, loading out and haulage. In the first and third divisions much progress has been made through the introduction of mechanical appliances, but in the second little, if any, advance has been achieved in the many centuries during which the art of coal mining has been practiced. Except in a few instances coal is still shoveled and loaded by man power, as in the earliest times.

In the design of the tractor loader about to be described four cardinal facts have been kept in mind. These are as follows:

(1) The loading of coal into the mine car is the largest single item of expense entering into the cost of production. All other operations are, comparatively, far less costly and are already being performed rapidly and satisfactorily by mechanical means. Consequently a machine that will successfully perform this operation opens tremendous possibilities for further economy. Not only does such a machine reduce the labor cost but it saves expense by concentrating the work in a smaller area than suffices when coal is loaded by hand.

(2) A machine of this kind in order to be successful must be of the simplest possible form and design. It must be exceedingly mobile and capable of being taken in and around sharp curves, through restricted passages and crosscuts. It must be suited for the performance of effective work in remote portions of the mine, at the face and in quarters cramped by mine posts.

(3) Such a machine must be of correct design and detail and the material entering into its construction

must be intelligently used as well as of the best quality procurable. No class of machinery receives harder usage and more abuse than does a machine which is employed in mining. To be successful a machine must require few repairs and cost a minimum for maintenance.

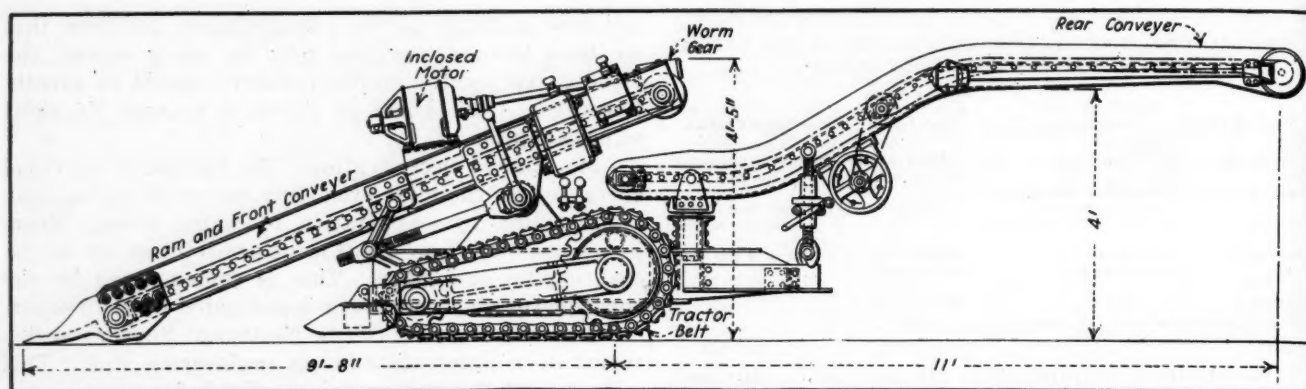
### ONLY ONE MACHINE THUS FAR CONSTRUCTED

During the last year I have built an experimental machine and put it to work. Its principle of operation, its simple mechanism, its mobility, compactness and ability to load coal rapidly have all been tested with satisfactory results. From the experiences designs have been prepared for machines which will embody the basic principles of the experimental loader, while containing certain improvements that will enhance its accessibility, capacity and endurance.

The materials employed in this loader have been selected with due care for the purpose they are intended to serve. The frame for the tractor carriage, ram conveyor and rear conveyor is built up of open-hearth rolled steel. All the frame castings and gear housings are of steel. Cast iron is used in only one place in the machine and there only for the construction of a small housing. All gears are of nickel-alloy steel, heat-treated; the shafts are either nickel or carbon steel, heat-treated and ground. The conveyor chains are of the roller-bearing type and have nickel-steel pins and rollers that have been hardened and ground. Both the rear and swinging conveyor are 42 in. wide, and the maximum shoveling capacity is 2½ tons per minute.

The length of the machine is 21 ft.; its height 4 ft. 6 in. The gage is 46 in. from center to center of tractor arm, while the weight is approximately 11,000 lb. The

\*Brief abstract of article entitled "Dillig Tractor Loader," read before the West Virginia Mining Institute at the Dec. 8 meeting.



**DILLIG TRACTOR LOADER PUSHES THE NOSE OF ITS FRONT CONVEYOR UNDER THE COAL TO BE LOADED**

Extreme mobility marks this machine. It goes up to the coal to be loaded wherever the coal may be and so long as the rear conveyor will reach the car the machine performs its work satisfactorily without having the coal brought to it. The inclination of the front conveyor is regulated by a toggle joint. All the gears in the machine operate in semi-grease, giving cleanliness, freedom from friction and minimum wear.

new models will be completed within the next few weeks. They are being manufactured by the Dravo Contracting Co., for the Dravo-Doyle Co., of Pittsburgh.

In visualizing this loader it may be convenient to consider the machine as being made up of three distinct units, each driven by an electric or, if necessary, an air motor. The most important of these is the tractor unit. The ram and front conveyor come second, while the swinging, adjustable rear conveyor ranks third.

#### TRACTOR GEARS RUN IN SEMI-GREASE

The tractor belts are composed of built-up rolled-steel shoes having large-size openings through which dirt and coal may work, thus preventing clogging. These shoes are fitted with roller bearings; their pins are of nickel steel, heat-treated, carbonized and ground, provision being made for lubrication with grease. The rollers likewise are accurately ground and provided with ample grease chambers so that the belt need not be lubricated more frequently than about once in four months. The tractor sprockets are of cast steel, and the teeth are accurately machined.

The tractor mechanism is driven by a 26-hp. inclosed motor, the gear train terminating in an internal drive at both large tractor sprockets. All gears and shafts in this device are heat-treated nickel-steel, and the teeth are accurately cut and finished. The pinions are forged integral with the shafts. All shafts except that of the internal-drive pinions are supported in ball bearings. This shaft is carried in special bronze boxes of liberal dimensions. It should be noted that a heavy, rigid cast-steel gear box incloses the gear train, the various members of which are flooded with semi-grease and protected from coal dust and other foreign material. The internal gear rings and pinions are similarly protected and lubricated.

#### BUILT TO SUSTAIN BLOWS OF FALLING COAL

The digging element is, of course, the business end of the entire machine. Here special attention is called to the rigid heavy steel ram casting. This is free from all mechanism and therefore capable of withstanding great punishment from the impact of falling slate or coal. Such falls are at all times more or less imminent. The machine is so arranged that the front end can be raised or lowered to the proper elevation and the shovel or ram made to follow the bottom. Its frame is built up of heavy channels and plates. Its conveyor is driven by an inclosed motor through a single worm reduction

gear inclosed in a cast-steel housing and operating in semi-grease. It is therefore thoroughly protected from dirt or coal dust. The worm carries triple threads accurately cut and polished. It is built of high-carbon steel, hardened, ground and supported by double-row radial and thrust ball bearings.

The rear-conveyor structure is designed to swing horizontally through an arc of approximately 120 deg., and may be raised or lowered to any elevation desired. The center bearing pivot as well as the trolley support rollers are provided with large ball bearings so that movement of this mechanism from side to side may be accomplished with small effort. The ability to swing the rear conveyor at will is of great importance in loading cars and when passing through narrow entries and crosscuts.

On this unit an inclosed electric motor drives the conveyor through a series of reductions consisting of silent chains and bevel gears, all inclosed in grease-tight cast-steel housings.

Operation of this machine is extremely simple. It is advanced and the large rigid shovel at the front end pushed under the coal in a manner similar to that employed in shoveling by hand, except that as the shovel or ram advances the conveyor picks up the coal and moves it to the second or rear conveyor, the function of which is to deliver the coal to the mine car. The operation is thus rendered continuous.

#### STORAGE ON CONVEYOR THREE-QUARTERS OF A TON

While the loaded car is being taken away and an empty put in its place the operative, if he chooses, can charge both conveyors with a load of coal approximating 1,500 lb. Some saving in time may thus be effected.

Emphasis may be laid on the following considerations: (a) The Dillig tractor loader is a single-purpose machine intended for loading only. (b) It requires no rails and only a fairly good bottom for its operation. In going from place to place it runs astride the rails and crosses over them without tearing them up. (c) The machine is extremely mobile. It may be moved from right to left, forward or backward, with equal ease and under the action of a simple control. (d) Where the face has been shattered and broken but not brought down the machine by a few repeated ramming strokes can readily dislodge, bowl over and load out the coal. (e) The machine is of a powerful and rugged design, weight being placed where it will do the most good. (f) Extreme simplicity and accessibility are notable features of the machine.



## Lignite Bricks Pave Canada's Way To Fuel Independence

Lignite Utilization Board to Place Briquets on Market  
— If They Prove a Commercial Success  
300 New Plants Will Be Erected

BY WALTER NOBLE BURNS  
Chicago, Ill.

**L**IGNITE briquets bid fair to win for Canada fuel independence from the United States. Though Canada is second only to this country in coal resources, it imports more than half its fuel from us. More than 400,000 tons of anthracite coal are brought annually into western Canada alone.

Tentative operations in making lignite briquets have been begun in a plant established at Bienfait, Sask., by the Dominion Government in co-operation with the governments of Manitoba and Saskatchewan. The plant will have a capacity of 30,000 tons of briquets a year, the briquets having practically the same heating power as anthracite and selling at half the price.

### BRIQUETS MAY TEND TO REDUCE COAL PRICES

The 30,000 tons of briquets will be only a drop in the bucket, compared to Canada's fuel requirements. But when the public has been educated to the use of this fuel and a market firmly established, the plant will be increased in size and others built. According to Government plans, the number of plants will keep pace with the developing market. If the venture proves a commercial success the plans call for 300 factories to be built in the next few years throughout the lignite fields of western Canada. With such a number of factories Canada can manufacture enough lignite bricks to supply its home market and make an important dent in the fuel markets of the United States and other countries. Even at this formative stage of the industry it seems logical to expect that eventually lignite briquets will prove an influential factor in reducing the high cost of coal.

The Lignite Utilization Board was formed in November, 1918, by an order in council of the Dominion Government. R. A. Ross, a well-known engineer, was appointed chairman, and associated with him were J. A. Sheppard, of Moose Jaw, and J. M. Leamy, of Winnipeg, both expert engineers, the latter electrical engineer to the Manitoba Government.

### EARLY BRIQUETS UNABLE TO STAND SHIPMENT

At that time the briquetting of lignite was in only an experimental stage. It had been accomplished but not in a way that would make it commercially valuable. The briquets of the pioneer makers were easily broken and consequently would not stand shipment. This was largely because of improper binder. Also they were subject to spontaneous combustion, which precluded their being kept in any quantity in storage. The problem confronting the board therefore was practically a first-hand one.

Though Canada is remarkably rich in coal beds, its fuel problem from the beginning has been constant and serious. The coal mines in the Maritime Provinces supply the eastern seaboard and Quebec, but, as coal barges cannot navigate the St. Lawrence river far above Montreal because of rapids, Ontario is almost wholly

dependent upon imports from the United States. The coal fields in the Western Provinces are even richer but have not been sufficiently developed as yet to supply the home market.

The area of coal lands in Canada is estimated at 111,169 square miles, containing 845,900,000 tons of semi-anthracite, 313,573,000,000 tons of bituminous, 932,053,000,000 tons of sub-bituminous and 111,286,000,000 tons of lignite. Despite these immense natural resources, the Canadian output of coal is only about 15,000,000 tons annually. The imports from the United States in 1916—the last official figures available—amounted to 17,000,000 tons, or over 53 per cent of the total consumption. Though much capital has been invested recently in Canadian coal mines and the industry is rapidly growing, the relative proportions between home and foreign supply remain practically the same today.

### COULD SUPPLY THE WORLD FOR HALF CENTURY

The lignite fields are mainly in central and southern Alberta and Saskatchewan and extend across the border into the northern tier of Western States. They contain enough fuel to supply the entire world for at least half a century if the world had to depend upon them alone. It was evident at the outset that if the Lignite Utilization Board solved the problem of manufacturing commercial briquets it would also go far toward solving Canada's fuel problem.

Four hundred thousand dollars was appropriated to finance the board's work. Half of this was furnished by the Dominion Government and half by the provinces of Manitoba and Saskatchewan. The board spent months in investigations of all known methods of carbonizing and briquetting coal. It found successful carbonization in use in the United States. But those engaged in the work south of the border were concerned chiefly with obtaining byproducts such as oil, pitch, ammonia sulphate and gas. Manufacturers in the United States, moreover, were dealing with a problem different from that confronting the board because they were using a much higher grade coal than lignite. The board learned that its problem had not been solved anywhere and that there was not, either in Canada or the United States, a single plant that was turning out lignite briquets on a large commercial scale.

### MUCH PRELIMINARY RESEARCH NECESSARY

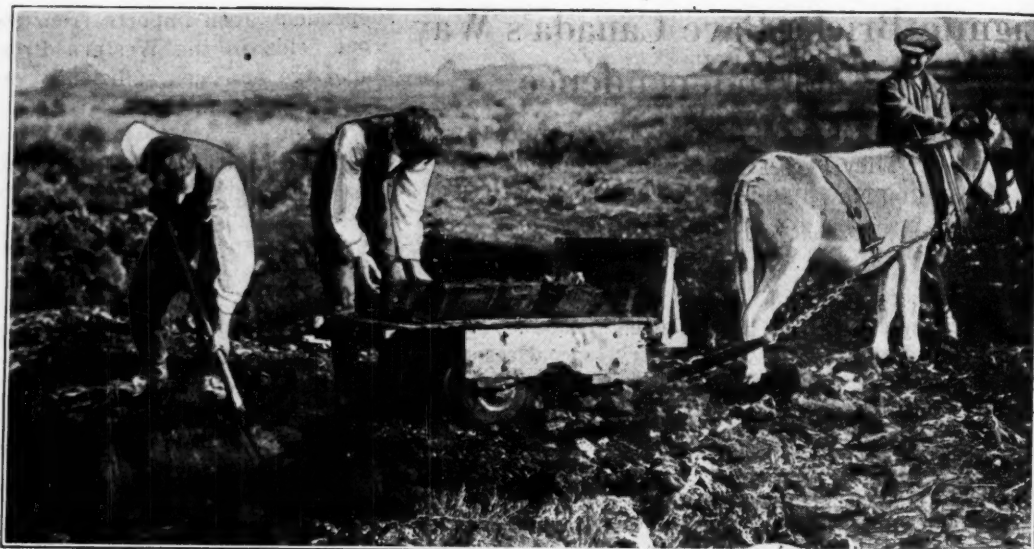
The board thereupon turned its attention to original experimentation. It was necessary to learn the relative weathering and storing qualities of raw, air-dried and oven-dried carbonized briquets; the proper adjustment of heat to the pulverized lignite, the rate of carbonization, the fineness of pulverization best adapted to the product as well as the best binder and the proper quantity to be used. The solution of these questions was preliminary to that of the right kind of machinery to install in order to insure successful manufacture, uniformity of product and continuity of output.

Having achieved a degree of success in carbonization, the board began the erection of the pioneer briquet factory of Canada. The site selected was at Bienfait, Sask., on the Souris River and in the heart of one of the greatest lignite fields in the Dominion.

The plant is now completed. Equipping it was more than a mere matter of erection. Many difficulties had

### Primitive Peat Handling

Peat is cut by shovel and piled by hand until well dried. It is used in the rough state in which it is cut. The scene is taken in the celebrated Bog of Allen, which unfortunately puts a belt of infertility across Ireland.\*



to be overcome. The apparatus and machinery were changed a number of times before a satisfactory output was obtained. Application of heat in the carbonization of the powdered lignite was a delicate process. Too little heat would not drive off the gases and too much would burn the coal, while uneven heat resulted in a non-uniform product. Niceties of adjustment were obtained only through painstaking effort long continued. This was only one of many subtle problems the board had to settle with absolute certainty and finality. The plant is now in tentative operation, briquets are being made, and the public will have its first chance to try out the new fuel when they are offered for sale next fall.

The finished product of the mill has been subjected to the severest kind of tests. The briquets have been soaked in water, frozen, thawed and frozen again, after which they burned as readily as when fresh from the press. The danger from spontaneous combustion has been overcome, as has also been the brittleness of the original product. This permits of rough handling and long shipments.

Briquets made in this mill represent low-grade lignite transformed into a product possessing all the good qualities of anthracite. Two tons of lignite make one ton of briquets containing as much heat as an equal weight of high-grade hard coal but selling for half its price. It is believed that a market will soon be built up for the new product and that additional factories will spring up rapidly. This in turn may quite possibly revolutionize the whole fuel situation of Canada.

THERE WAS A heavy decrease in the tonnage of anthracite and bituminous coal transported on the canals of New York State during the 1920 season of navigation when compared with the tonnage of 1918 and 1919. A comparison of the tonnages carried during the three years shows the following:

	1918	1919	1920
Anthracite .....	100,705	82,788	53,686
Bituminous .....	44,086	9,128	7,976

Of the tonnage carried in the season just closed there were transported over the Erie Canal 37,257 tons of anthracite and 3,938 tons of bituminous, and over the Champlain Canal 16,429 tons of anthracite and 4,038 tons of bituminous.

\*The bog extends from Wicklow Head to Galway on the south and from Howth Head to Sligo on the north and is perhaps the biggest peat bed in the world. In Kings and Kildare Counties it is 25 ft. thick. Methods such as these are not suited to the use of peat industrially, especially where the material has to be transported by railroad and must compete with good coal.

### Development of Alaska's Coal Resources Shown in Annual Mineral Report

THE annual report on mineral resources and production in Alaska for 1920 is now in preparation under the direction of Alfred H. Brooks, of the U. S. Geological Survey, Department of Interior. Complete statistics of the mineral production of Alaska cannot be collected for four or five months, but some of the important features of this report relating to mining development during the year are issued herewith.

Though the mining industry of Alaska as a whole suffered a serious depression in 1920, yet the value of the total mineral output was greater than in 1919, chiefly because of the great increase in the production of copper, largely to be credited to the four large copper mines in the territory. The value of the total mineral production of Alaska was \$19,620,913 in 1919 and about \$22,070,000 in 1920. The output of the gold placers has decreased, but that of the gold lode mines has been maintained.

#### VALUE OF MINERAL PRODUCTION IN ALASKA IN 1919 AND 1920

	1919	1920
Gold.....	\$9,426,032	\$8,000,000
Copper.....	8,783,063	12,400,000
Silver.....	705,273	900,000
Platinum and allied metals.....	73,663	80,000
Tin.....	73,400	20,000
Lead.....	72,822	142,000
Coal.....	343,547	380,000
Petroleum, marble, gypsum, quicksilver, etc.....	143,113	148,000
Totals.....	\$19,620,913	\$22,070,000

One of the most important events of the year was the beginning of systematic underground exploration of the Matanuska coal field under the auspices of the Navy Department. Mining was continued in this field also by the Alaskan Engineering Commission on about the same scale as in previous years, to obtain fuel for the railroad and the nearby towns. Much underground work was done by the Bering River Coal Co. in the western part of the Bering River field, but no coal was produced except for use at the mine. The Alaska Coal & Petroleum Co. also continued underground explorations in the eastern part of the field.

The completion of the railroad between Fairbanks and Healy Creek (except for the Tanana River bridge) early in 1920 made the Nenana coal accessible, but the temporary bridge at Nenana River was washed out by a flood, and the coal was carried across the river by aerial tram. During 1920 coal was mined in the Nenana field at the Burns and Calderhead mines, operated under temporary permits. A lease was granted to the Healy River Coal Mining Co. in the same field. Lignitic coal also was mined on a small scale in the Cook Inlet region and in other parts of Alaska. A coal land lease was granted in the Cook Inlet field. The coal production in 1920 was about 68,000 tons; that in 1919 was 60,674 tons.



# Why the Export Coal Business of America Should Be Built Up—IV

World Shortage of Coal Likely for Several Years and This Country Must Fill the Need—Our Merchant Marine Needs the Encouragement an Extensive Coal Trade Would Provide—An Ideal Weight Equalizer

BY ERICH W. ZIMMERMANN, PH.D.\*

IN CONCLUDING the preceding instalment of this article we pointed to the necessity of further analysis of statistics showing the weight balance of our foreign trade. As they stand, the figures can hardly be used as the proper basis of estimating the need or the lack of need of a tonnage equalizer such as England possesses in her coal exports. A threefold reduction is necessary. We have to analyze our exports and imports first in regard to the kind of vessels required to carry different commodities; secondly, as to the respective deadweight tonnage requirements of different commodity movements, and, thirdly, as to the direction in which our exports go and from which our imports come. General comparisons of the respective weights of total imports and exports bring us nowhere. Only a detailed study covering the three main points just enumerated will place us in a position from which the real merits of the case can be intelligently judged. We shall discuss these three items in their order.

The first point deals with vessel types. In order to understand the relation of coal exports to merchant shipping we must know that merchant ships may be divided into three main types: (1) Fast liners which carry passengers and general freight, usually both; (2) specialty steamers, such as tanks, refrigerator steamers, colliers, special ore carriers, etc., which because of their construction may be used for one kind of cargo only, and (3) tramps, the ships which carry the bulk commodities of commerce, roaming about without a schedule to whatever place happens to offer an attractive cargo.

## TRAMP VESSELS CARRY THE WORLD'S COAL

By far the greatest portion of the international coal trade of the world is carried on in tramps. So if we wish to ascertain to what extent coal exports today are valuable to us as return freight for incoming cargoes the only kind of cargoes we are interested in is tramp cargoes. We have to find out how much of our imports are carried in tramps, where they come from and what outbound cargo besides coal we have for these incoming tramps.

How important such an analysis is for a clear grasp of the real significance of coal exports may be illustrated by an example of our trade with the middle American region. In 1918 the import movement from that region to the United States amounted to approximately twelve million long tons while the exports weighed less than seven million. One might immediately conclude that here is a good market for coal, as coal could be used in establishing the proper balance between imports and exports. But study of the details of the case easily bars such conclusions.

About half our imports from this middle American region is oil, which is transported in tank vessels, and a goodly portion of the other half is bananas, which also require better transportation facilities than are afforded by the common tramp. There is some molasses, which of late also has been transported by the tank method. That leaves only sugar and ore. Much of the ore is destined to the Bethlehem Steel works, which is putting into service a fleet of special ore carriers. These ships do not bother with coal cargoes, but rely for profitable employment upon the quickest possible turn-around. So with the exception of sugar, some of which is carried by liners, there is no out-and-out tramp cargo. This case may suffice to show how carefully conclusions have to be drawn if entirely erroneous deductions are to be avoided.

## ESTABLISHING THE NEED FOR COAL EXPORTS

Viewing the matter in this light we would now have to ascertain what proportion of our exports and imports respectively moves in tramps. If we could definitely establish this fact it would be a big step toward proving the need for coal exports as a tonnage equalizer—in other words as return freight for excessive tramp imports.

Generally speaking, tramps carry raw materials, such as cotton, jute, ore, grain, etc., while manufactured goods choose liners. Our exports consist chiefly of manufactured goods and our imports of raw materials and foodstuffs—that is, if we forget coal, our exports are prevaillingly liner cargoes and our imports tramp cargoes. The tendency is for our imports of raw materials and foodstuffs to increase and for their exportation to decrease—at least relatively speaking. On the other hand, larger exports of manufactured goods are required to liquidate our indebtedness, particularly to Latin America and to Asia, the main sources of our imports.

This transformation of our foreign trade characterized by the swing of foodstuffs and raw materials from the export to the import side is clearly shown by the following charts. The two diagrams show exports and imports respectively, not the actual figures but only in per cent. One can read from them at a glance how our exports of foodstuffs and raw materials, which during the period 1830 to 1870 made up approximately 70 per cent of our export trade, gradually decreased to about 40 per cent. During 1918, due to our heavy shipments of war materials, these commodities contributed even less than 30 per cent. The import side tells just the reverse story, foodstuffs and raw materials rising from about 20 per cent to over 50 per cent.

This tendency will continue and is likely to gain momentum, for two reasons: (1) The process of the industrialization of the United States slowly but surely

\*Professor of commerce, James Milliken University, Decatur, Ill.

continues; (2) the war has made us a creditor nation. Our foreign investments amounted to about thirteen billion dollars at the end of 1919, while only about one billion dollars worth of American securities were held abroad. This enormous foreign loan eventually must at least bear interest.

That means that our total imports at some not too distant future date will have to exceed our exports. A constructive foreign trade policy requires that every effort be made to have these imports take such form and move in such channels that they shall not undermine our own industrial prosperity. That means that these imports must largely take the form of foodstuffs and raw materials. Just when this reversal of our trade balance will occur is hard to predict. Messrs. Vanderlip and Williams, in their excellent analysis of our international trade balance entitled "The Future of Our Foreign Trade," seem to expect the actual swing to an excess of imports in the late twenties. Our export of shipping, banking, insurance and like services will help the transition while continued investments will delay it.

#### COAL EXPORTS LIKELY TO BE NEEDED SOON

Thus if we read the signs of the times aright, we shall need coal exports before long, and as wise trade policy takes the long distance view of things. We must see into the future and lay our plans today to meet requirements of the future. And there are several reasons why the present time is particularly opportune for laying the foundation of a strong coal export trade. The world faces a coal shortage for the next few years and we are the only nation that can fill the gap. The trade of our strongest competitor is swung loose from its moorings and our young merchant marine needs the encouragement which a large volume of coal exports can afford it.

Enough has been said of future possibilities, but we wish to know how matters stand today. General estimates, however, are the best we can produce. We found that about 40 per cent of our exports (value) is foodstuffs and raw materials. While their weight is undoubtedly more than 40 per cent of the weight of the total exports, the weight of exports carried in tramps probably is hardly more than one-third of the total sea-borne exports—a large portion of our wheat exports move by liners; mineral oil, which is a very important export item as far as weight is concerned, moves by special vessels, and cotton shipments, which next to coal probably provides the biggest tramp employment of all American exports, are decidedly seasonal in nature and therefore play a relatively unimportant part during a considerable part of the year. On the other hand, probably two-thirds of our imports come by tramps. Assuming these estimates to be approximately correct we get a very different picture from that shown by our table (in the preceding instalment) comparing the British and American trade positions. There are several features which clearly point to an increasing significance of exported coal for the American trade balance and to the reverse in the case of Great Britain—rapidly increasing coal exports for the United States, rapid decrease for the United Kingdom, rapid increase of imports for the United States and practical stagnation for Great Britain, relatively slow increase of exports exclusive of coal for the United States as against Great Britain's pressing need for greater exports.

If our assumptions are correct, then our coal exports in 1920 just about afforded enough weight to offset the

excess weight of our imports over our exports—speaking of that portion of our sea-borne trade which is carried by tramps. But that conclusion again is based too largely upon assumptions. We have to analyze the matter still further. As will be remembered, two additional modifying factors remain to be discussed.

The second point refers to different amounts of dead-weight tonnage required in the transportation of different commodities. To use a technical term, commodities differ as to their load factor, which is the index showing how many weight tons of a given cargo may be stowed in a vessel ton. The mere weight of imports and exports is not an exact indication of the value which coal may or may not possess as a tonnage equalizer.

#### RELATION BETWEEN WEIGHT AND CARGO TONS

To illustrate the extent to which the relation between weight tons and cargo tons affects the need of cargo space the following facts may be cited. In 1918 the 3,500,000 long tons of cargo exported from the United States to the middle American region required less than 400,000 deadweight tons for their transportation. On the other hand, the 20,500,000 tons going to Europe needed 6,800,000 deadweight tons. This means that in the first case the average cargo ton carried nine weight tons in the course of the year against less than three in the second case. Of course, it is next to impossible to definitely state just what the tramp tonnage required in each of our trade services is and just exactly how many tons of coal are needed to fill empty tramp space for the return voyage. We have to be content to state the problem, to lay the foundation for further studies which will accurately prove what we are trying to indicate in a general way.

The third point brings the discussion to a study of the geographical distribution of the coal export trade in relation to the excess of inbound deadweight tonnage

REGIONS TO WHICH U. S. EXPORTS REQUIRED GREATER TONNAGE THAN THAT IN THE OPPOSITE DIRECTION (FISCAL YEAR 1918)  
(In 1,000 Tons)

Region of Shipment:	Deadweight Tonnage Requirements Exports	Imports	Excess in Per cent	Coal Exports from United States
European and Mediterranean.....	6,800	800	88	201 (Italy)
West and South Africa.....	123	77	38	...
East Asian.....	741	493	33	...
River Plate.....	575	415	28	248 (Argentina)
Australian.....	230	165	28	...
Peruvian.....	75	55	27	...

REGIONS FROM WHICH U. S. IMPORTS REQUIRED GREATER TONNAGE THAN THAT IN THE OPPOSITE DIRECTION  
(In 1,000 Tons)

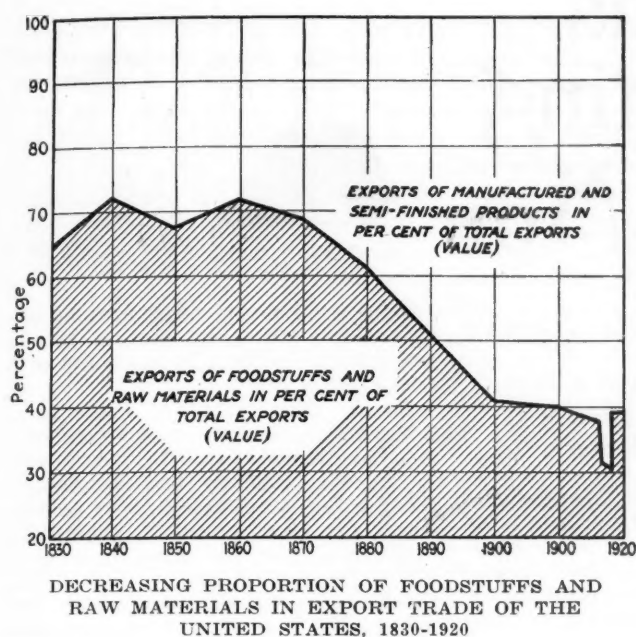
	Imports	Exports	Per Cent	Coal Exports
Eastern and Western Caribbean.....	318	184	42	611
Philippine.....	224	77	66	...
East Indian.....	318	133	60	...
Mexican.....	449*	94	80	155†
British Indian.....	383	191	50	...
Central and North Chilean	550	318	42	324
Amazon and East Brazilian.....	401	360	10	735 (Brazil and Uruguay)

\* Heavy oil shipments. † Mostly overland.

REGIONS WHERE EXPORT AND IMPORT REQUIREMENTS OF DEADWEIGHT TONNAGE BALANCE SATISFACTORILY  
(In 1,000 Tons)

	Exports	Imports	Coal Export:
Hawaiian.....	89	88	...
West Indian.....	398	408	1,795





employed on the various trade routes radiating from our shores or terminating in our ports.

Using material furnished us by the division of planning and statistics of the U. S. Shipping Board we have compiled the following tables, which divide the important trade routes of our foreign commerce into three groups on the basis of deadweight tonnage requirements of imports and exports. By incorporating in these tables the figures for our coal exports we believe we have furnished as adequate a basis for estimating the worth of our coal exports as a tonnage equalizer as the present supply of information available permits.

It is easy to pick out the regions where coal helps to bring about a better balance between the respective tonnage requirements of the export and import movements of commodities. It is also clearly evident that our coal trade to Europe is rather likely to offset than to remedy the tonnage balance. But, as we have said before, other but merely selfish commercial considerations come into play to justify this trade as much as our West Indian trade, where coal serves ideally as the tonnage equalizer.

Altogether it may be said that while the return freight factor is potentially the most important aspect of the coal export situation and one which ought to be made the basis of a scientifically planned and methodically executed trade policy, the present situation, as far as shipping is concerned, is such that almost any exportation of coal, no matter in what direction or in what amount, is justifiable as a means to ward off what could easily develop into a disastrous freight-rate situation. There is no other commodity which can stabilize the charter market as can coal. The temporary restriction on our coal exports during the summer resulted in a rapid drop of charter rates, and of all the merchant fleets our own is perhaps the most vulnerable.

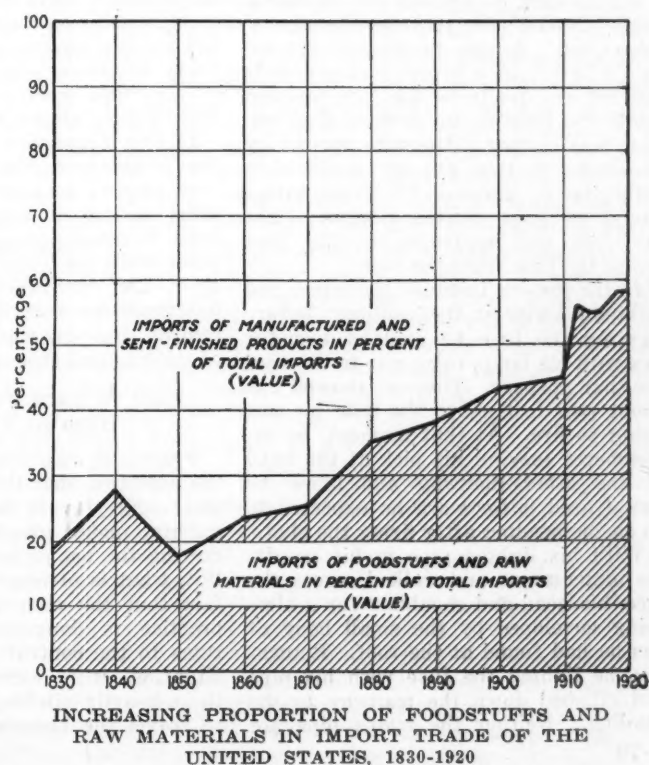
The merchant marine, however, is not the only branch of our economic structure which benefits from coal exports. We have pointed out before how in the case of Great Britain coal exports have reduced the freight rates on imported foodstuffs and raw materials. It is hardly possible to measure the extent to which we could benefit in this manner from a scientific coal export policy. The economies thus obtained would outweigh

by far any loss which a slight increase of the domestic price might bring to the consumer.

Even the money value of coal exports must not be forgotten. Frequently we value things more highly after we mourn their loss than while we enjoy their possession. This seems to be the case with Britain's coal exports.

Finally, there is one more argument in favor of coal exports which we might call the diplomatic aspect of the matter. The following quotation may suffice to illustrate this point. In one of the speeches which the late Lord Rhondda delivered before one of the learned societies of England when he was as yet plain Mr. D. A. Thomas we read: "As far back as 1552 'Newe-castele coles' were described as 'that thinge that France can lyve no more withowte than the fyshe withowte water,' and it was suggested to Sir William Cecil, as a method of embarrassing the French, that they should be deprived of British coal; a suggestion to which effect may perhaps with advantage be given should any trouble unfortunately arise in the future." To control the coal supply of a country means the possession of a powerful weapon. But perhaps we are in so fortunate a position that we can spurn such methods and ignore such phases of the subject, particularly so as the economic advantage of coal exports is clearly evident and far-reaching.

To sum up, we may say that coal exports are the backbone of a strong merchant marine, to which they afford more ample and more regular employment than any other commodity of international commerce. Through reduction of import freight rates due to tonnage equalization coal exports cheapen the staff of life of all industrial enterprise: foodstuffs and raw materials. Coal exports may exercise a beneficial influence also over the exchange situation; therefore their financial value should not be overlooked. In short, the advantages to be derived from them are such that only a short-sighted commercial policy can interfere with them in any other way than to direct them into those channels where they will do the most good.





# Problems of Operating Men

Edited by  
James T. Beard



## Cigarettes and Pipes in Gas a Menace to Safety

Smoking Cigarettes and Pipes, in Mines Generating Gas, is a Dangerous Practice and One Extremely Difficult to Eliminate Because of a Widespread Belief that Gas Cannot be Ignited from This Source

WITH much interest, I have read the several letters relating to the question of whether or not methane can be ignited by a pipe or cigarette. Regarded from a practical standpoint, the question is not as "foolish" as some of the writers seem to think. I regret to say that smoking a pipe at the working face is a practice far too common in the southern anthracite field, where the coal pitches heavily and the mines generate gas to such an extent as to require the use of safety lamps.

Owing to the conditions peculiar to this section, small bodies of accumulated gas are frequently encountered during the dayshift. Although smoking is prohibited at several of the collieries I have in mind, the practice is carried on stealthily by many of the miners. The belief is general among them that, under the working conditions that prevail in these mines, the gas cannot be ignited by either a pipe or a cigarette.

### LIGHTED PIPE FAILED TO IGNITE GAS AT FACE OF PITCH

An incident of which I was myself a witness would seem to prove the miners' contention. A man working on the inside manway of a breast had a ribhole tamped and ready to fire. A common method of lighting the fuse, in that section, was to heat a fine wire red-hot by thrusting it through the mesh of a safety-lamp gauze. Or, the miner would go down to the heading, light his pipe and returning to the face ignite the fuse from the pipe.

In the present instance, the miner had lighted his pipe on the heading. Before lighting the fuse he made a test for gas with his lamp, raising it to the roof for that purpose. The test showed gas about two feet above the hole he was going to fire. At that moment, he remembered leaving his pick at the head of the other manway and knew he would need it for work he expected to do on the heading after firing the shot.

With his lighted pipe in his mouth, the miner arose and walked across the face, his head and shoulders for a time being enveloped by the small body of gas he had found at the roof. Returning, he lighted the fuse with his pipe and climbed down the manway to the heading. Neither the man's pipe nor

the shot fired the gas, the powder used giving little flame and the hole being directed in another direction. For myself, I failed to realize what the man had done, until after the shot had exploded, when the risk he had taken came over me.

### PREVAILING BELIEF OF SAFETY

Like the lighted pipe, the red-hot wire had always been considered a safe means of lighting a fuse. It was the general belief that neither of these sources of heat would ignite gas. The fact that the records show that accidents due to the ignition of gas were infrequent is largely responsible for this belief. Had more accurate records been kept they might show a different state of affairs.

From my own limited experience, I am compelled to admit that I do not know of a single instance where gas has been ignited by a lighted pipe or a heated wire. I have lighted an acetylene lamp by means of a pipe; but found that, in order to do the trick, it was necessary to have the tobacco burning so vigorously as to be almost in flames. Let me say, however, that this does not prove anything, since the ignition point of acetylene gas is much lower than that of pure methane.

In this connection, there is one point that should be considered. Much of the pipe tobacco now on the market contains saltpetre, which often accumulates in small particles that burst into flame when the tobacco shows but a dull glow. This fact presents a very dangerous condition that the miner does not realize when he smokes first one kind of tobacco and then another.

### FACE TO FACE WITH CONDITIONS HARD TO ELIMINATE

Practically, we are face to face with the condition that the smoking of pipes and cigarettes is being practiced by miners, under gaseous conditions requiring the use of locked safety lamps. But, what is of most importance is the fact that the men do not believe the practice is dangerous, regardless of rules to the contrary. To sum up the situation, it is extremely difficult, in these heavily pitching veins, for a man to travel the breasts without the men

working there having ample warning of his coming before he reaches them, which makes it hard to catch the offender in the act.

To my mind, education along this line is the only solution to the problem. It is important that tests be undertaken to prove conclusively how dangerous the practice of smoking is in places where gas is generated in quantities that require the use of safety lamps. The importance of making such tests should appeal to all, even though we may regard it as "foolish" to question the danger of smoking in gas.

Scranton, Pa. SUPERINTENDENT.

### Skill vs. Chance in Mining

*Success in mining, so far as the miner is concerned, may result from his peculiar skill or be a matter of chance, as was the case under a system adopted many years ago in the north of England but which happily has had no following in this country.*

S N discussing the question of the S skilled and unskilled miner in *Coal Age*, Oct. 28, p. 904, Jacob Skoff, expressed the idea that the man who was willing, energetic and ambitious and who took pleasure in the performance of his work was the type of man who would achieve the greatest success, which expresses my idea exactly.

Reading his letter set me to thinking that there are other elements involved in the problem. One has no trouble to recognize a skillful miner when he enters his place. The road is clean, the place well kept, the roof supported with timbers, the coal spragged, his powder kept under lock and key; in fact everything tells you the man knows his job.

### EVIDENCES OF LACK OF SKILL

On the other hand, the unskilled miner is a grumbler who is never satisfied. He blames his lack of success to bad tools; the coal is too hard or too soft, and the roof dangerous. The latter is generally the case because he has failed to set the needed timbers. The end of the month finds the unskilled miner unprepared. His place is not squared up, and he is in an ugly mood with himself and all about him.

When cars are scarce in a mine is a good time to observe the difference between a skilled and an unskilled miner. The former wastes no time waiting for cars, but busies himself breaking down coal and getting ready for loading a good number of cars when they are set in his place. Instead of following



this example, the unskilled man goes home complaining he cannot work as there are no cars; but an investigation shows that he has not coal enough down to load one car if it was in his place.

There are different ways of inducing ambition in men. Some men are susceptible to flattery and a little praise goes far toward making them more active and energetic. A good way is to bring a man, if possible, to feel his responsibility for doing his share in keeping up the daily output of the mine. A man with any sense of pride will respond to such an appeal, though it will have no effect on others.

#### CHANCE SYSTEM OF DISTRIBUTING MEN PRACTICED IN ENGLAND

In the north of England some years ago, a number of the coal companies operating there established a chance system in distributing the working places among their men. The system had its advantages and disadvantages. The chief advantage lay in the fact that it was evident there was no favoritism shown. Each place had a number and at the end of every quarter (three months) a drawing took place among the miners. No man could complain that he was not being treated right by the foreman when he drew a poor place. He had the consolation, however, that he would probably draw a better one next time.

In the practical working of this system the difference between the skilled and the unskilled miner, was clearly observed. A skilled miner who drew a poor place would apply himself with renewed energy and do his best to keep up his record, while the unskilled miner would lay down on the job and waste much of his time during the three months he must work the place. Quite frequently the man would quit altogether.

#### THE SYSTEM DID NOT HELP THE MINE FOREMEN

This chance system by which the miners were permitted to draw their working places every three months did not relieve the foreman, however, of his particular difficulties. It was still hard to keep the men at work in the poorer places, except where such places were drawn by good, energetic men, who were not afraid and always willing to do their share of the work.

Development work was often slow, because it took men away from places for which they were best fitted. There was a constant change of places every three months and it often happened that a careless miner would ruin a good place before the three months were up, so that the plan had to be abandoned.

It is not strange that the chance system here described has been abandoned. Far better is it to distribute the working places in a mine according to the merit of the men. Each man knows then that he must finish his place before he can get another.

Scarcity of labor, particularly in the anthracite region, has brought about many perplexing problems in mining.

Years ago, every available place in the mines was filled by two men, a miner and his laborer. The miner was considered as a contractor and hired his help.

The contract plan made everybody work, since a miner who could not break down the coal fast enough could not keep his laborer. On the other hand, the laborer who could not load what coal was broken down by the miner would not be able to hold his place.

Today, because of the scarcity of labor in the mines, it is rare to find more than a single man in a place. This necessitates hauling coal from many points, in order to maintain the output of the mine and makes haulage a serious problem in many mines.

Observation leads me to think, however, that our miners as a class are becoming more skilled and perform better work than formerly. It is hoped that, as time goes on, conditions in this respect will improve, and we shall operate the mines to better advantage so that less coal will be wasted.

Plains, Pa.

RICHARD BOWEN.

#### Coal Production in England

*Machine mining in the United States cannot be argued as one of the chief factors in the greater production of coal per man in this country, as compared with the production per man in Great Britain.*

REFERRING to the discussion regarding the greater production of coal per man per day, in the mines of the United States, as compared with the same items in England, allow me to make a few comments, based on an experience of twenty years in English mines and over thirty years in this country.

First, it is true that more than one-half of the coal produced in the United States is mined by machines. However, statistics give the output per man per day, in machine mining, as 3.71 tons. This is a low average and would seem to indicate that machine mining is not the principal factor concerned in the large output per man per day, in this country. We may therefore set it aside as being of minor importance.

#### SOME HIGH AVERAGES IN ENGLAND

Allow me to cite one or two instances that go to show that all the coal-mining districts in England do not show the same low rating as has been claimed. For instance, I remember hauling coal from one man who mined and loaded seventy-two 10-cwt. wagons, making a total of 36 tons, which was the man's average daily output.

I willingly admit that this was a high average, much above the normal. What I consider a fair daily average is shown by another man who loaded thirty wagons of the same capacity, in the same time, making his daily average an output of 15 tons. This, I believe, can be taken as a normal average in that district. The mines were worked on the longwall-retreating system. The dis-

tance the men had to travel from the shaft to their working places was not great, which gave them more time at the working face.

To show the effect of less favorable conditions, I will state that the average output per man per day, in a seam lying a few hundred feet below, in the same shaft, was not more than one-tenth of the normal average previously quoted. The men working in this lower seam had numerous difficulties to contend with, which briefly stated were as follows:

#### NATURAL HINDRANCES TO MINING BRITISH COAL

In this deep lying seam, much gas was generated, which compelled the use of Clanny safety lamps, instead of the tallow candles used by the miners in the upper seam. Again, the coal was hard and there was much water in the roof, which demanded constant care in timbering the places. Last but by no means least were numerous clay veins penetrating the coal.

Another element that acts to curtail production in England is the strict surveillance of the workers in the mine. Some large mines in this country are just as strict in their requirements, but they are not face to face with the same difficulties. Many English mines have inadequate openings; the shafts are often small and the equipment underground crude. Such mines would require elaborate changes in order to enable them to handle larger tonnages than their present output.

There are, of course, many of the more recent openings that are well equipped and second to none in this country. In respect to haulage, there are to be seen in England some of the finest systems of rope haulage that can be devised. These reach underground for miles and miles, operating in different sections of the mine.

Another of the chief set-backs, in English mining, is the scarcity and high cost of mine timber. The same is reported in respect to mines in Pennsylvania, but the conditions are not to be compared with those in England.

My conclusion is that natural conditions are the chief factors in reducing the output of a man per day, in England, and increasing the cost of production of coal. These conditions are: deep shafts, much water, hard and thin coal, faulted seams often containing clay veins, small cars or mine wagons, etc., etc. R. W. LIGHTBURN.

Gans, Pa.

#### Experiences of a Tracklayer

*Many valuable points develop in the daily experiences of a careful trackman, who is often able to suggest improvements that are worth considering and would save expense and trouble if adopted.*

LOOKING over the back numbers of *Coal Age* the other day, I became much interested in two or three excellent letters on the subject of tracklaying and haulage in mines. This being

in line with my own duties leads me to offer a few comments.

One of the points mentioned in the letters I read related to the ballasting of mine tracks, and the writers advised the use of broken stone, cinders and ashes. Making the roadbed solid and keeping it well drained is one of the important factors in mine haulage, and depends much on the skill and faithfulness of the trackmen.

#### TAKING BALLAST INTO THE MINE

For sometime I was employed in the soft coal mines in Indiana. The coal being underlaid with a fireclay bottom it was necessary to take broken stone into the mine to ballast the tracks. In the anthracite region where I am now employed, there is plenty of good stone found in the mine and I have no difficulty in making a good roadbed.

It has been my practice to space the track-ties on haulage roads 2 ft., center to center. If these are laid on rock broken small and the space between filled with the same and covered over with ashes the result is a good roadbed. The rails should be well spiked to the ties and fishplated. Few things are more dangerous in haulage than loose or high joints. The latter have caused many painful accidents, owing to the habit of boys and too often men, riding the bumpers of cars and sliding one foot along the rail.

#### BAD PRACTICE OF DRIVER BOYS CAUSES FATAL ACCIDENTS

One instance that I recall was that of a driverboy whose foot caught in a high joint in the rail as the boy was riding the bumper of his car and permitting his foot to slide the rail, as just stated. Striking the high joint, the boy was thrown under the car and killed.

In another case where the boy driver was performing the same trick, the spreader to which the tail-chain was attached caught in a switchpoint as the car approached the switch. The switch-rail was lifted and pierced the boy's stomach causing his death in a short time.

An accident of this nature shows the importance of protecting all switchpoints, guardrails, and frogs. A common practice is to drive a short piece of wooden rail properly tapered into the crotch of a frog and otherwise protect switchpoints and railends.

#### LAYING A ROOM SWITCH REQUIRES CARE AND JUDGMENT

Trackmen should be careful when laying a room switch or "branch," as we sometimes call them. It frequently happens, however, that the tracklayer is not to blame for a badly planned room switch. A foreman will often direct the miner to turn a room at a point where there is not sufficient distance for laying a good branch into the room. Had the tracklayer been called before the room was started, he would have told the foreman that it would be impossible to lay a good switch at that point, and that cars would often be derailed by reason of the sharp curve.

However, the trackman on being told to put in such a branch will generally get a frog with a widespread and do his best to make a good job, knowing that there is bound to be trouble in getting cars in and out of the room. Every derailment of a car means lost time to the miner and expense to the company, which can only be avoided by care and judgment in laying the track.

Many tracklayers neglect to use a rail-bender when laying a sharp curve. Instead, they spring the rail around the curve and brace it against the rib to hold it in place. This practice never makes a good job, as when the cars pass over the place the spring of the rail tends to force it out of line. If a rail bender had been used there would

be no trouble provided the track is well laid and ballasted.

My advice is, if a foreman has a good tracklayer let him treat him right and give him every chance to do good work. It will pay in the end. Otherwise the trackman cannot be held responsible for conditions that he did not choose. An experienced trackman can generally make valuable suggestions in the planning of roads, partings, crossovers and room switches. Consult him on all occasions and give his suggestions careful consideration. The main points in tracklaying are good road bedding, long branches, ditches at the side of the road for drainage, and a good clearance space between the car and the rib.

Pittston, Pa. BENJAMIN DEEBLE.

## Inquiries Of General Interest

### Electrical Installation Gives Insufficient Power

*Failure to obtain the estimated power from an electrical installation may result from a number of causes, but where the installation has been made by a competent electrician the trouble will generally be due to some fault in the engine and not in the generators or distribution of the current.*

FOR some reason that has not as yet been discovered, we have failed to secure the power needed at our plant, which is operated electrically. We are running two generators of 150 hp. each, which appear to me to be overloaded, and yet we cannot get the power we need to operate the plant.

While I do not claim to have a working knowledge of electricity, I have reasoned that the trouble lies in the circuit. Taking the matter up with the electrician, I drew his attention to the fact that the A. M. P. is set at 400 and insisted that it should be set at 500, in order to give us more power. He assured me, however, that I was wrong and told me that I could get no more power in that way. Still thinking that I am right and being unable to convince the man in charge, I appeal to *Coal Age* for help. MINE FOREMAN.  
Chambersville, Pa.

It is quite obvious that, as the correspondent has stated, he has not a working knowledge of electricity. We gain from his statement, however, that there are two generators in operation, each capable of supplying 150 hp. These are, of course, operating in parallel in order to make due provision for the variable load common in the operation of a mining plant.

It is impossible to know exactly what is meant by the statement that "the A. M. P. is set at 400," and the sugges-

tion that this "should be set at 500." Seemingly, the reference is to the amperage or current for which a circuit-breaker is set.

Assuming the generators are operating on a 250-volt circuit, a current of 400 amp. would correspond to  $(400 \times 250) \div 746 = 134$  hp., which would seem to indicate that the setting of the circuit-breaker at 400 amp. would be about right. On this assumption, it is hard to understand the suggestion of overloading the generators to give a current of 500 amp. when it is stated that they already appear to be overloaded at 400 amp.

It is more than probable that the trouble, in this case, is to be found in the engine driving the generators rather than in the electrical installation. But this can only be determined by overhauling the engine and renewing any packing or worn parts that may be necessary in order to enable the development of the full power required.

### Working the Redstone Coal, Pittsburgh District

*Information is asked regarding what method should be adopted in working 200 acres of the Redstone coal in the Pittsburgh District.*

WE HAVE in contemplation the working of 200 acres of what is known as the "Redstone coal" in the Pittsburgh District. It should be stated that all the coal, in this 200-acre tract, has been worked out of the Pittsburgh seam, that underlies the Redstone coal.

Before going further in this undertaking we are desirous of securing any advice that *Coal Age* or its readers can give regarding the quality of this coal, and whether it would make a good seller as a byproduct, gas or steam coal. What difficulties are likely to be met in this undertaking and what is



the best method to adopt to overcome them?

OPERATOR.

Pittsburgh, Pa.

This is a question that we hope will attract the attention of some of our practical readers operating in the Pittsburgh district, who will be able to give

the desired information and advice asked by this correspondent. The question calls for an intimate knowledge of local conditions that can only be gained by long experience in the district. For this reason, we are asking for it the consideration that it merits in its practical aspect.—EDITOR.

## Examination Questions Answered

### Examination for Mine Foremen, Thirteenth Anthracite District

(Selected Questions)

**QUESTION**—In a mine where 750 men are employed and 100 mules, how many splits of air will be required according to law, assuming that five mules require as much air as one man?

**ANSWER**—On this basis, 100 mules are equivalent to 20 men and the circulation must provide for a total of 770 men. The Anthracite Mine Law, (Art. 10, Sec. 6) provides that "not more than 75 persons shall be employed at the same time on any one current or split of air." In compliance with this law, the number of splits required in the mine will be  $770 \div 75 = 10.26$ , say 11 splits.

**QUESTION**—(a) If a fan is producing 100,000 cu.ft. of air per minute and your measurements near the faces of the gangways showed 40,000 cu.ft., would you consider the ventilation good or bad? (b) If bad, what would you do to remedy the same?

**ANSWER**—(a) The measurements taken at the faces of the gangways show a loss of 60,000 cu.ft., which is very bad. In a well ventilated mine, the loss should not exceed 10 or 15 per cent.

(b) The work of cleaning up the entries and air-courses should be started at once. Wherever practical, shorten the distance the air must travel and avoid sharp angles or turns in the course of the air. Enlarge all breakthroughs and crosscuts so that the area of each shall be at least equal to the area of the gangway. Repair all stoppings that are leaking and make all doors and air bridges as nearly airtight as possible. Avoid the use of doors wherever practicable.

**QUESTION**—What general conditions determine the size of pillars in a mine that will yield the greatest amount of coal after robbing is completed and the mine is abandoned?

**ANSWER**—The depth of cover, thickness and inclination of the seam, character of the coal and overlying and underlying strata, the presence of faults or slips in the formation and the amount of water or gas in the strata, together with the width of openings and the percentage of coal to be taken out in the first working, are

the chief factors determining the size of pillars. Much depends on the quality of the coal, whether hard or soft, and its action when exposed to the air. The method of working and the length of time the pillars will be required to stand before they are drawn must also be considered.

**QUESTION**—(a) Describe the water gage and state what it is used for. (b) If the pressure producing ventilation is 13 lb. per sq.ft., what is the water gage reading?

**ANSWER**—(a) A mine water gage is a glass tube having a quarter-inch bore and mounted on a suitable base to which an adjustable scale is affixed, as shown in the accompanying figure. Water is placed in the bend of the tube to indicate, by the difference of water level in the two arms of the gage, what is the difference of pressure exerted on them. Both ends of the tube are open and one arm is extended and bent at right angles to enable it to be inserted in a hole in a brattice separating the intake from the return airway. The pressure on the intake is always greater than that on the return in a mine.

This causes the water level to sink in the arm of the tube opened to the intake and rise a corresponding amount in that opened to the return. The difference in the two water levels is read on the scale, in inches. Each inch of water gage reading corresponds to a pressure of 5.2 lb. per sq.ft.

(b) A ventilating pressure of 13 lb. per sq.ft. corresponds to a water-gage reading of  $13 \div 5.2 = 2.5$  in.

**QUESTION**—There are twelve chambers working on a gangway, the air going to the face of the gangway and returning along the faces of the chambers. An explosive mixture is found in the fifth chamber from the face of the gangway. What precautions would you take to prevent an explosion and injury to the men?

**ANSWER**—On the discovery of the gas, all the men should be withdrawn promptly from the entire section.

While some foremen would permit the men to continue working in the four rooms at the head of the gangway, consideration for their safety will require their withdrawal, provided the quantity of gas found is considerable. Having withdrawn the men from the entire section, the mine foreman and his fire-bosses should take charge and permit no one to enter the section except a few experienced men selected for the work of removing the gas. Only safety lamps can be employed in doing this work, which must be started where the air, after traversing the first four chambers counting from the head of the gangway, enters chamber five.

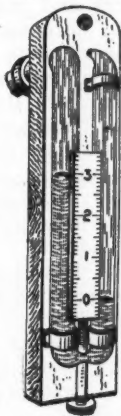
The air may be entering the mouth of the chamber or the last crosscut nearest the face. In either event, canvas must be erected at the point where the air enters and extended gradually toward the face of that chamber, giving time for the air to remove the gas as the canvas is extended. A careful watch must be kept of the lamps, and tests must be made from time to time to ascertain the progress of the work. In this manner, the gas must be removed from each chamber in succession, until the entire section is clear. It may be necessary to increase the circulation of air in the section, in order to remove the gas at the faces of these chambers.

**QUESTION**—(a) What is a squeeze and what causes it? (b) What would you do to check its progress? (c) At what stage of its progress would you withdraw the men engaged in checking it?

**ANSWER**—(a) A mine squeeze is a condition caused by the crushing action of the overburden resting on the pillars left to support the roof. A squeeze is manifested by the "nipping" or scaling off of the coal from the ribs of the pillars when the latter are too small to support the weight above them. When the roof and coal are hard and the bottom soft the pillars are often pressed into the bottom. In that case, the bottom is said to heave and the condition is commonly termed a "creep." A squeeze is the direct result of leaving too small pillars to support the roof.

(b) The best means of checking a squeeze that has started is to make every effort to induce a fall of roof in that vicinity and thereby relieve the pressure on the pillars. The setting of timbers and building of cogs have only a local and temporary effect, the timbers being soon broken by the tremendous pressure thrown on them. To cause a fall of roof all timbers must be withdrawn from the waste, and it may be necessary to place shots in the roof to start the fall. The work of drawing back the pillars must be pushed wherever it will relieve the pressure on the affected district.

(c) The judgment and experience of the men in charge must determine when danger is imminent and the men should be withdrawn. The presence of gas or water in the strata increases the danger and requires the utmost care and watchfulness to protect the men.



A MINE  
WATER  
GAGE

# The Responsibility of the Coal Consumer\*

Co-operation Required of the Public as Well as of Producer and Railroads—Uniformity in Demand Necessary to Remove Disastrous Seasonal Strains on Rail Equipment—Early Buying and Storage up to Limit of Requirements Urged

BY C. E. LESHET†

ONE of Aesop's fables relates that one day the members of the body announced that the stomach was getting all the food while they were doing all the work. They therefore agreed to strike and henceforth the arms would lift no more food, the mouth would chew no more. All was well for but a short time, when the arms and legs became weak and the mouth parched and dry. They soon came to the conclusion that in its own way the stomach was doing its share of the work and that all parts must work together in harmony to keep the body together.

Similarly the consumer has his place in the scheme of things and if he be a consumer of coal he must do his share in helping with the so-called coal question. I say "so-called" coal question because before the war there was no coal question in this country except as the producers were faced with bankruptcy and the miners with low wages and short working time. In the years prior to 1916 shortage of coal was unknown and high prices undreamed of.

The public itself is largely responsible for most of the fuel shortage that arises to embarrass us from time to time. In years past the railroads gave adequate service and the purveyors of all commodities could and did give prompt attention to the needs of consumers. The public has come to feel that it is only for them to indicate when and how they will purchase their requirements in any line and the necessity will be provided at a minimum price and without inconvenient delay.

Because coal comprises more than one-third of the total freight tonnage of the railroads, it is impossible for the carriers to handle a substantial majority of this tonnage in a few months each fall and winter coincidentally with the peak demand for the movement of other commodities. A tremendous overdevelopment of railroad facilities would be required to take care of such a cumulative load, which in turn would have to be reflected in heavier freight rates.

## MUCH TROUBLE CAUSED BY IRREGULAR OPERATION

Irregular operation of the soft-coal mines is one of the biggest factors making for trouble in the coal industry. F. G. Tryon, of the U. S. Geological Survey, recently stated that:

"Bituminous coal mines of the United States have a developed capacity and a present labor force about 30 per cent in excess of what is required to supply the demand. In consequence, the labor and capital engaged in the industry have been idle during the past thirty years an average of ninety-three working days a year, and there is little evidence that the condition is improving. Irregularity of working time is injurious to the miner because it means direct loss of earning power, to the operator because it means higher costs per ton, to the railroads because it means seasonal demand for transportation, and to the consumer because it increases the cost of coal."

In one way or another, either by direction or indirection, the consumer of coal will be compelled to pay a higher price for his fuel requirements until he follows the very rational policy of "buying before the rush."

Why is it not possible for the coal consumer to have all the coal he wants whenever he wants it, if the mines and mine labor are sufficient to supply 30 per cent more than we have ever required? I can do no better than to read you from an address by A. G. Gutheim, a national

authority on transportation in the coal industry. He says:

"The first evidence of difficulty in the transportation of bituminous coal is a coal-car shortage—that is, an inability on the part of the railroads regularly and adequately to meet the demands of the mines for empty cars in which to load and ship their production to market. Coal-car shortages have been so serious and so nearly continuous for the past four years that there is a tendency to forget that previously the situation was just the reverse. For many years prior to the late summer of 1916 there customarily existed in this country a surplus of cars available for coal loading in excess of all demands therefor almost 90 per cent of the time. The occasional coal-car shortages were strictly seasonal and local; nationwide or long continued difficulties of this sort were unknown.

## ADVANTAGE OF EARLY PURCHASE AND STORAGE

"The seasonal and local coal car shortage is the result of a sudden and heavy demand for coal which comes late each summer in anticipation of, and later is accentuated by, the arrival of cold weather. The cure of such difficulties is more with the consuming public than with the producers and carriers. The former may, with little if any loss, purchase and store their extraordinary winter's coal requirements, in part at least, earlier in the season, when mine and transportation facilities are not, as a rule, fully utilized. But the latter, in effecting a cure, must mine and transport with even greater intensity during the period of strong demand. This would require larger investment in mining and transportation equipment and more employees in those industries, and these are things to be avoided where possible; certainly in the bituminous coal mining industry.

"If the future held in store no more serious problems in bituminous coal transportation than those customarily met with prior to 1916, the subject could be dismissed as not of particular importance. But our experience since 1916 has been distressing and at times attended with danger. That experience warrants serious consideration of its causes and the best endeavors of all concerned to eliminate those causes henceforth. . . .

"In the rather harsh experience of the past four years there are these signs for the future: (1) The bituminous coal mining industry is developed far beyond the present or immediate future demands of our domestic and foreign trade in bituminous coal. (2) Our railroad facilities probably are adequate today to handle our necessary annual bituminous output produced with fair uniformity of rate throughout the year and will certainly be adequate when post-war rehabilitation of the properties is completed. (3) Our railroad facilities are not, and without great waste of investment never can be, adequate to handle currently our necessary bituminous coal production when obtained by weekly peaks of 13,000,000 tons and valleys of 7,500,000 tons in a twelve-month period, as has been the case these past two years. . . .

"Let it be kept in mind that production, transportation, distribution and consumption are the four big factors in the bituminous coal industry, and should be reasonably well balanced. Of course, such disturbances as war and nationwide strikes constitute emergencies which require corresponding treatment. But under ordinary conditions proper co-ordination of these four big factors is possible and the result should be better conditions of mining and railroading, lower costs of production and transportation, and better prices and distribution to the consumer."

\*An address before the Hartford branch of the American Society of Mechanical Engineers, Jan. 10, 1921.

†Editor of *Coal Age*.



When the normal coal consumer thinks he has enough coal for his needs he has no interest in the subject and when he thinks he has not enough his interest is keen, for coal is absolutely necessary. And when the coal consumer concludes that he needs more coal and he experiences increasing difficulty in obtaining supplies he is quite likely to be stampeded. The individual consumer may not know how many tons of coal there are above ground in the whole country or how fast coal is being produced, but he does know about his own supply and needs, even if he does not always act intelligently on the information. Individually and in the aggregate coal consumers are slow to change their minds. When they stop buying, because they think they have sufficient supplies, they stay out of the market too long, and when they get started they are hard to stop.

#### EFFECT OF THE STRIKE OF COAL CONSUMERS

The most momentous strike that ever effected the coal industry was that of the coal consumers. From the day of the armistice until awakened by the "Buy-Coal" campaign of the National Coal Association in June, 1919, a total of 41,000,000 tons, or more than 5,000,000 tons a month, was taken from storage. The consumer refused to buy, and the drop in reserves in extent and precipitateness is without parallel in our history. It is not too much to say that had this consumers' strike been settled three months sooner than it was—had the decrease in reserves ceased in April instead of July—there would have been no strike of the bituminous coal miners in November, 1919.

Price reduction by a manufacturer, producer or merchant is possible only through the reduction in commodity cost or by the absorption of loss through sale below cost, which latter remedy must of necessity be of short duration, continuing ordinarily only long enough for the seller to dispose of his stock on hand. His replacement stock, for further sale, must be obtained at a lower price or he cannot continue to do business.

Coal companies carry no stock of mined coal at the mines. Storage of coal at the point of production is only in the seam—in the ground. There is therefore no loss to the producer through sale of accumulated stock on hand or otherwise, except as open market competition might prompt a few producers, usually of the poorer grades of coal, and for some arbitrary reason, to mine and sell coal for a time at less than cost.

If during the coming year the coal industry is to escape the delay in contract commitments and early-season shipments so notable in the spring of 1919 and that brought such deplorable results in the fall and winter of that year, the public and coal consumers of every class must promptly inquire into the question of whether the proper basis of prices has been reached and, having satisfied themselves on that point, must thereafter not only arrange for their next season's coal supply but must direct early shipment and store the maximum possible tonnage that they can safely and economically handle.

Such early-season movement of coal by industrials and by retail dealers directly through to the consumer's basement is vitally essential if in the fall and winter of 1921 the shortages of 1917, 1919 and 1920 are to be avoided and if, as well, high "spot" market prices that might arise from such lack of early buying are to be averted.

#### PRICES LARGELY PREDICATED ON LABOR COSTS

The average manufacturer, producer, distributor and retailer, recognizing the present universal countrywide public demand for lower prices on all commodities, including coal, are, after one fashion or another and with varying degrees of earnestness, trying as promptly as possible to "unload." The Federal tax laws have had an automatic tendency to hasten this process during the past few weeks.

With bare shelves and bins, however, purveyors in general have become justly concerned as to whether the public has a proper appreciation of the situation. All business, including the coal industry, will move forward haltingly until it is apparent that these changes in conditions are recognized. Evidence of such recognition will find its most

dependable and helpful expression in the form of buying orders and renewed contracts.

The commercial value of practically every commodity is largely predicated on the cost of labor, the extent of such labor value in a given commodity varying somewhat but ranging as an average well above one-half the total cost. In coal production labor directly constitutes slightly more than 70 per cent and indirectly, through the labor tied up in necessary material and supplies used in and about a mine, adds an additional estimated 10 to 12 per cent, making the ratio of labor to total mine cost nearly 82 per cent.

The coal operators in the union fields—representing 70 per cent of the total production—have a wage agreement with the mine workers. This agreement and scale was defined and authorized, in so far as it pertains to the so-called Central Competitive Field, by the U. S. Bituminous Coal Commission, and does not expire until March 31, 1922. It would seem, therefore, that present wages cannot be reduced.

The only major economies possible in the operation of a modern, well-equipped coal mine come through full-time work or the nearest possible approach thereto. For a mine to produce coal, two things are absolutely essential: (1) A consumer to whom coal can be shipped. (2) Railroad cars in which to transport coal.

A coal-operating company can provide neither of these nor can it be held responsible for the lack of either, both of which so largely determine the lower limit of cost and selling price of coal.

The essential factor determining how cheap coal production may be is full running time for the mines. Every idle plant, like an idle horse in the barn, "is eating its head off." If the cost of coal-mine idleness is to be reduced there must be a regular demand for coal and cars for its movement. To the extent that it fails to buy early and throughout the summer season, the public itself is directly responsible for any unwarrantably high prices it may pay for coal later in the year.

Here in the East you, as advisers to the coal consumer, must press home these facts, in that part of the United States farther west, where bituminous coal is the fuel of the household, it is among the responsibilities of the retail dealer to make domestic consumers in particular understand this. If the substantial majority of domestic bituminous coal might move directly through the dealers' yard to the consumer's basement prior to Oct. 1 of each year, as it does with Pennsylvania anthracite, and go forward in something like equal monthly amounts, more would be done to avert any likely period of annual fuel and railroad distress in the Chicago territory than from almost any other remedy.

#### NECESSARY TO MOVE COAL DURING SUMMER

Although but sixty million tons of bituminous coal is handled as household fuel the number of individual coal consumers involved is 95 per cent of the total. Much of the traffic in this coal is long haul in small lots, all of which necessitates more transportation detail in movement to final destination, greater delay of equipment for unloading and in its reassembly for return to the mines for re-loading. We all know that summer is the time for such movement. Can we convince the public of its direct responsibility and get it to act? It is certainly worth a generous effort.

High coal prices in 1919 arose directly from the "consumers' strike" in the spring and summer, followed by car shortage from August to November and thereafter by the miners' six-weeks' strike—all conditions which tended to reduce supply and develop shortage, leaving the country with bare coal bins last spring and ripe for a tremendous demand in 1920. The high price that accompanied this demand was inevitable.

#### What of 1921?

Ample car supply and adequate motive power on all railroads for all commodities throughout the coming spring and summer are promised. What the heavier demands and weather conditions of next fall and winter may develop with respect to the ability of the railroads gen-

crally to handle maximum peak loads remains to be seen. Whether there will be a car shortage during the last half of 1921 depends almost entirely on the extent to which the railroads are used to capacity during the first half of the year. If goods—farm products, manufactured goods, coal, ore—are not moved to meet current consumption between now and July 1, we will repeat in the last half of 1921 much of our transportation difficulties of 1920.

#### EARLY DELIVERY TO DIMINISH PEAK LOAD

Every ton of coal forwarded to its final destination—the consumer's bin or storage pile—between now and July 1 will reduce just that much the peak load the railroads will have to handle next winter. Each of the past five years it has been this peak—impossible for the railroads to promptly negotiate—that has caused the unfortunate operation of the law of supply and demand and consequent high prices.

To start right every coal buyer must have the essential facts which will enable him to know for himself when the proper price basis has been reached on the particular coal he ordinarily buys.

If I do not name exact prices that are likely to prevail in 1921 it is because this is not a dollars and cents discussion; it cannot be, because coal prices even in a single state vary widely. Based primarily upon costs at individual mines, production of which in turn, varies with the character of the operation and the thickness of the bed mined, there is a wide variation in the prices that may be quoted by companies seeking business.

Prices of coal cannot in 1921 be as low as in pre-war times; on the contrary they must approximate contract figures prevailing last April. Deliveries on these contracts have been steadily protected throughout the past year by dependable and long-established companies who have not felt prompted, much less warranted, in capitalizing a temporary opportunity to charge extortionate prices to the disadvantage and loss of an old-time and valued clientele. Seventy-five per cent or more of all the coal shipped from the mines of the country in 1920 did not carry higher prices than were necessary to cover costs and a reasonable profit. Speculation was responsible for objectionable prices on less than 25 per cent of the coal—I am not sure but that I can say on less than 20 per cent.

The difference between mine cost and selling price—the margin, of which roughly but 50 per cent is profit—of 496 soft coal operators, producing 101,000,000 tons of coal in ten months of 1920, or about 25 per cent of the total for the country, according to testimony introduced before the Calder committee of the Senate last week, was 71c. The weighted average selling price of all this coal was \$3.45. Twenty-five companies, selling 0.91 of one per cent of the 101,000,000 tons, realized above \$5.99 per ton.

#### COAL ABUNDANT AND PRICES LOW IN SPRING

In the spring and early summer of 1919—February to June inclusive—when coal was abundant, car supply ample and coal-producing companies in all parts of the country were anxious to enter into early-season commitments, the price on all kinds and preparations of coal moving from every producing field in the country was probably at a minimum.

No market adjustment in 1921 can reduce prices on the basis of production cost. Moreover, since then there have been three upward adjustments in the wages paid to mine labor, each of them very substantial and each of them twice or thrice any previous pre-war advance ever granted. One of these advances (14 per cent) became effective in mid-December, 1919, and was a part of the conditions under which work was resumed following the November-December strike. An additional 13 per cent was awarded by the U. S. Bituminous Coal Commission, becoming effective April 1, 1920. Finally, following other local "outlaw" strikes in July, 1920, a still further advance of \$1.50 per day was given to day-wage men. It is estimated that in some fields this allowance was equivalent to another 13 per cent general advance.

The wage rates will continue to the expiration of the present existing wage agreement—March 31, 1922—and

the increase in mine cost they have occasioned—perhaps as much as 40 per cent—must be added to the contract and current market prices prevailing in the spring of 1919 to determine the probable opening season price levels of the year 1921 on any given grade of coal from any field. Wage levels throughout the entire country in union and non-union fields are essentially based upon this major agreement with the United Mine Workers and mine costs for similar conditions are approximately the same in all sections.

Production of coal in the first six months of 1919 was the lowest for a number of years. During this period government officials sounded warnings on the inadequacy of coal production; the coal operators, through the National Coal Association, conducted a countrywide advertising campaign urging consumers to buy their coal "NOW"; finally the Railroad Administration gave special preference to coal over all other industries in the use of open-top cars, and even then and regardless of the highest rate of production the country ever reached the stock of coal on hand on Nov. 1, 1919, was entirely inadequate to carry us over the period of the miners' strike.

The responsibility of the coal consumer may be summed up in the statement that as the holder of stocks he should be fully informed at all times of the situation with respect to rates of production, consumption and stocks and should act intelligently on his information. He is the arbiter of the destiny of the coal industry and, it follows, of his own destiny in respect to coal.

The refusal or failure of every consumer to buy coal to the limit of his ability to store up to his requirements will simply mean another developed shortage to be met in the fall of 1921. It is idle to wait for "hoped-for" but probably impossible price reductions before buying. Make it your first task to ascertain the exact facts on coal costs and prices and then start buying and storing at the earliest possible moment.

#### Nova Scotia Ratifies Montreal Agreement

**R**ATIFICATION was given to the Montreal Agreement at the referendum held in District No. 26, Nova Scotia, Dec. 14. After the bitterest kind of a campaign, J. B. McLaughlin finally obtained the adhesion of the mine workers by a majority of 2,009 votes—6,499 to 4,490. This agreement gives an increase of 55c. to day labor, 10c. on the tonnage rate and 12½ per cent on dead work.

Trouble is by no means at an end, however. But the Stellarton and Westville locals repudiate the action of the executive officers and have intimated that the mine workers will not be held down to the terms of the compact. The men have made demands on the Acadia Coal Co. and the Intercolonial Coal Mining Co. They would like to make a separate agreement—almost any kind of contract would do, as it would show their independence of the United Mine Workers of America.

Meantime the operators at Lanark mine, outside New Glasgow, are asking a reduction of the wages of their men, declaring that they cannot operate under the present wage and price conditions.

FRED MOONEY, SECRETARY of District No. 17, United Mine Workers, has protested to the Labor Department against the importation of strikebreakers in the West Virginia coal fields where a strike has been on for some time.

THE SOUTHERN APPALACHIAN COAL OPERATORS ASSOCIATION will hold its annual meeting in Knoxville, Tenn., Jan. 21, 1921. The Harlan County Coal Operators Association and the Hazard Coal Operators Association of Kentucky and the Virginia Operators Association will meet with the Southern Appalachian operators on this occasion. Both J. D. A. Morrow, vice-president of the National Coal Association, and John Callahan, traffic secretary, are on the program. The secretary, J. E. McCoy, advises that he also is arranging for several other speakers of national reputation. Reports are that the meeting will be well attended and that the program will be of interest to every operator in the South.



## Calder Hearing Reveals Alleged Sinister Activities As Honest Effort to Meet Unusual Conditions

**M**OST of the scare headlines based on early deductions from the Calder coal probe were disproved during last week's hearings. The hearings now are simmering down to the point where alleged irregularities are being explained. In the light of these explanations, that which was at first proclaimed as sinister appears simply to have been the natural procedure in the face of abnormal and unusual conditions.

Capital was made of the fact that the Interstate Commerce Commission put into effect an order drafted in the offices of the National Coal Association. It now has been revealed, apparently to the satisfaction of the committee, that the Interstate Commerce Commission usually asks that requests for an order take the form that the persons interested would like to have the order assume, just as judges require attorneys to draft injunctions and other documents. As a matter of fact, most lawmakers are familiar with that procedure, as the original draft of most legislation is made by persons interested.

A. G. Gutheim, of the car service division of the American Railway Association, touched on the above point in his testimony when he said: "The agreement we reached [the operators and the railroad men] was proposed in the form of an order. The proposed form had been drafted by the coal people in the course of the conference and modified in some slight particulars by us. That, I might say, in view of some of the questions that have been asked previously at this hearing, is the usual way in which a good many of these things are handled by the commission."

### EDGE STATEMENT EXONERATES COLONEL WENTZ

Another assumption which came in for big headlines throughout the country was an error, as is explained by a statement issued by the National Coal Association, printed elsewhere in this issue.

After all that has been said about the activities of Colonel Wentz in his dealings with the War Department, it doubtless is gratifying to him to have the following out-and-out statement from Senator Edge:

"I will say frankly that, from your statement here, it is quite evident that you did not take any advantage of it [the War Department contract]. I am glad to say that. Any operator who wanted to take advantage of this certainly could have done so, in all kinds of ways."

In answer to a question as to whether the representatives of the railroad protested against Service Order No. 10 on the ground that it changed contract coal into spot coal, Mr. Gutheim, in his testimony, said:

"Assuming that this coal was under contract, we did not see any reason why, if any order was issued, it should not be such as would compel the man who had the contract to ship the coal. If any order was issued and you relied upon the good faith of the operator who had the contract to ship the coal and thereby reduced the amount necessary to be obtained by assessment you at least put yourself in the position where you might be double-crossed by an operator who had a contract to ship up the Lakes and chose not to do it, upon the understanding that somebody else's assessment would fill in his coal."

"The position we took was that under those circumstances the first operator, if he chose not to ship on a contract, would have his coal free for the spot market, whereas the coal that went in substitution for that to Lake Erie ports would be there as spot coal. That was the first objection. The second objection was that the railroad men never thought that the people beyond the Lake had their coal bought. When the sub-committee, of which Mr. Groverman was a member, allocated the coal on a blanket percentage basis, instead of allocating it according to contract, I was convinced that they did not have all the coal bought that they said they had bought."

When Mr. Gutheim was asked if the order resulted in great increase in the price of coal to the Northwest, he said:

"If I am to answer on the strength of the grapevine gossip we get I would say it did increase the price of coal to the Northwest, but nobody really knows about it until it is checked up."

With regard to the activities of the National Coal Association in the matters of publicity Senator Kenyon read into the record a letter from the director of publicity of the National Coal Association to Vice-President Jenkins, of the Hutchinson Coal Co. The letter deals with the handling of the publicity at the Cleveland meeting, in which it was pointed out that the Associated Press report of the meeting was, to a very large extent, the word-for-word product of the publicity department. Senator Kenyon asked if the letter was a mere bouquet that the director of publicity was passing to himself. Colonel Wentz replied that the methods outlined were not the general method of procedure. Colonel Wentz was asked if he knew how it was brought about that the Associated Press should carry statements prepared by his director of publicity as if it were a mere matter of news. Colonel Wentz admitted that he did not know how that matter had been handled.

Addressing Colonel Wentz, Senator Kenyon made this statement: "You proceed on the theory, of course, that the coal business is a private industry. Coal is a basic matter. We cannot carry on the country without coal. It is like the railroads. I do not ask you to say, but I would like to have you think about it, because it is coming along some day, whether the coal that the country must have, that the Army must have, that the Navy must have, is absolutely a private business. The anthracite coal in this country is in the hands of a few corporations. You cannot conduct the country without it. People cannot live without coal. Is it absolutely a private business?"

To this Colonel Wentz replied that it is just as much a private business as is lumber, or oil or other wasting materials.

"No, one wants to harm the coal business," said Senator Kenyon, "but the people intend to see to it that they are not robbed by extortionate prices. How could a law that would require the giving out of profits to the public harm you?"

### War Department Coal Cost \$4.67-\$9.59 a Ton; Wentz Calls Methods Unbusinesslike

**C**OLONEL D. B. WENTZ of Philadelphia, president of the National Coal Association, according to an official statement of the National Coal Association, was cleared before the U. S. Senate Committee on Reconstruction and Production on Jan. 6 of any imputation of having taken advantage of the contracts entered into between himself and the War Department during the recent soft-coal shortage emergency, by which he was authorized to purchase 275,000 tons of coal for the department at a maximum price of \$11 a ton. Colonel Wentz appeared as a witness before the committee at its morning session, explaining the circumstances surrounding the making of the contract and the manner in which he had carried it out.

Colonel Wentz made it clear to the committee that while he was authorized under the contract entered into between himself and the War Department last September to purchase 275,000 tons of soft coal, he had strongly advised the department against making a contract for coal for immediate delivery, because of the upset condition of the market. He advised the War Department, he said, to buy only enough coal to last from day to day, and to put off buying supplies for the department's winter needs until prices in the open market were down.

Against his advice, Colonel Wentz explained, he was obliged in September, October and early November to buy a portion of the tonnage called for in his contract with the department. The aggregate amount of coal purchased

by him for the War Department, he said, was exactly 72,979 tons, at prices ranging from \$9.59 to \$4.67 a ton, instead of \$11, the maximum provided for under the contract. Under this arrangement with the government, Colonel Wentz explained, he received 50c. a ton as commission. By purchasing only 72,979 tons of the 275,000 tons demanded by the War Department, he said, he saved the government in commissions alone over \$100,000. His actual commissions aggregated approximately \$36,000. In answer to a question of Senator Edge, Colonel Wentz unhesitatingly declared that he regarded the contract made by the War Department as "unbusinesslike." At the end of Colonel Wentz's statement Senator Edge remarked, according to the official stenographic report: "From your evidence here it is quite evident that you did not take any advantage of it [the contract with the War Department]. I am glad to say that, as far as I can follow the testimony."

Senator Edge asked Colonel Wentz if it was true that if any operator "wanted to take advantage of the contract he could certainly have done so in all kinds of ways," and Colonel Wentz replied: "Unquestionably."

Colonel Wentz made it clear to the committee that the coal he purchased for the government was bought not at his own mines but from operators who had coal not under contract that was offered in the open market. It was solely because of the shortage of coal, Colonel Wentz said, that high prices prevailed in the fields where he was forced to buy the coal.

Colonel Wentz criticized the War Department's method of contracting for its coal supply, saying that instead of arranging for coal before the beginning of the coal year, which starts April 1, the department waits until the beginning of its own fiscal year, July 1. In this way, he said, the War Department fails to take advantage of more favorable market prices which ordinarily prevail before the beginning of the coal year. Nearly all of the large operators, he said, usually have contracted for the larger part of their yearly output by the time the government arranges for its own supply.

"More businesslike methods in arranging for its coal," Colonel Wentz said, "would save the War Department a great deal of money."

#### WATKINS COMPANY UNJUSTLY ACCUSED

In evidence given Jan. 6 before the Reconstruction Committee, according to a statement by the National Coal Association, a grievous injustice was done the Watkins Coal Co. of Pennsylvania, which has offices in New York City, the company being represented as having made a profit of \$6 a ton on coal for the War Department.

At a matter of fact the Watkins Coal Co. sold only 670 tons through the Kentz company, of Philadelphia, to the War Department, and on that coal it received a gross sales commission of less than 25c. a ton. The National Coal Association is advised that the coal in question was not produced by the Watkins Coal Co. at all but was coal which that company was selling for other producers, acting as their sales agent. The production of the Watkins Coal Co. itself was all under contract and was all shipped on those contracts to regular customers. None of it went to the War Department in any transaction.

Senator Kenyon, of the committee, in checking over the list of coal companies from which the Wentz company, of Philadelphia, had purchased coal for the War Department, found the name of the Watkins Coal Co. He asked Colonel Wentz if the Watkins Coal Co. was a producer of coal. Colonel Wentz replied that it was. Senator Kenyon immediately drew the inference that the coal covered by the War Department transaction was purchased at the mines of the Watkins Coal Co.

Unfortunately Colonel Wentz did not know that the Watkins Coal Co. was not only a producer of coal from its own mines but also was a wholesaler of coal, and in the latter capacity had marketed the output of various other coal operators in accordance with their instructions. The record of the Watkins company is absolutely clean. Its officers have already telegraphed to Senator Kenyon requesting an opportunity to be heard by the committee immediately so as to rectify the injustice done them.

## Army Purchases Bituminous at Average of \$7.12; Anthracite \$7.76 Per Ton

TESTIFYING in the Calder committee inquiry into army coal purchases made through Colonel Wentz, Colonel J. P. Barney, of the Quartermaster Corps, testified that the average price paid for 765,252 tons of soft coal, all of which was due for delivery on or before Jan. 5, 1921, was \$7.12. The price of 170,000 tons of anthracite purchased by the army averaged \$7.76 a ton.

Colonel Barney said that prices for army bituminous coal for the year had advanced 192 per cent over the previous year, while anthracite prices had advanced 100 per cent. He added that the Assistant Secretary of War had authorized open-market purchases of 900,000 tons of bituminous at \$10 a ton and 350,000 tons of anthracite at \$13.

## Can't Agree on Arc-Wall Cutting Rate

EFFORTS of a joint commission of operators and miners of northern West Virginia to reach an agreement as to the rate of wages for the arc-wall large-type coal-cutting machine have so far proved fruitless, notwithstanding several joint conferences. In conjunction with other meetings of the Northern West Virginia Coal Operators Association a meeting of the commission was held in Fairmont on Jan. 3 and although the commission wrestled with the rate for the better part of two days, it was not found possible to reach an agreement, representatives of the operators so reporting to the advisory committee of the Northern West Virginia Coal Operators' Association, which held a meeting to receive the report of the members of the commission.

It was not so much the rate itself over which there was a disagreement as it was as to who was to receive the benefit of the rate. The representatives of the operators took the view that a cutter should receive the entire benefit. Representatives of the miners refused to accede to that view, advancing the proposition that the loader also should participate in the new rate, whatever it might be, as finally determined.

The operators were represented by George Brackett, of Fairmont; J. W. Bischoff, of Elkins; S. D. Brady, of Fairmont; J. M. Orr, of Clarksburg; and E. S. McCullough, of Fairmont, the association's labor commissioner. The miners were represented by Percy Tetlow, of Salem, Ohio; Joe Feeney, of Flemington; Joe Morton, of Ida May; William Petry, of Charleston, vice president of district 17, and Charles Batley, international representative of the United Mine Workers.

## Union Urges Open-Shop Law to End Strike in Mingo County, West Virginia

JUST when the non-union mines in Mingo County, West Virginia, are beginning to run steadily, and the union mines, being small and inefficient, are ceasing to run at all, the union proposes that a law be passed that all West Virginia's industries be compelled to run open shop. Details of the plan may show that the bill to be presented will be one which prescribes that union men must not be discriminated against but that non-union men may be. That is, there may be "closed shop" to non-union men but not "closed shop" to those that belong to the union. That will doubtless be carefully disguised in the bill. As a result the extended Mingo County strike, so long nearly lost to the union, may be brought by them to a successful conclusion.

The rumor that the union was going to make the proposal was being discussed by the officers of the military forces in Williamson Jan. 7. A meeting was to have been held Jan. 12 at which all the thirty-five locals of Mingo County were to have been represented. The Superior Thacker Coal Co., which at one time ran a union mine employing 100 men, and which closed down that mine recently, has reopened it on a non-union basis.

*Owing to the next issue being devoted to the statistical review for the past year and outlook for the future, all technical articles and the departments of Discussion, Inquiries and Examination Questions will be omitted.*



## Unfair to Attack Coal Trade Alone, Says Senator Sutherland, When Abuses Exist in Other Industries

**F**OLLOWING constant grilling of coal men over alleged profiteering on War Department coal orders by the Calder Committee on Reconstruction and Production Senator Howard Sutherland, of West Virginia, in an emphatic speech in the Senate on Friday last declared the committee should not single out coal, and in fact questioned its authority to go into the matter, fuel having no direct relation to building. He suggested that if profiteering was to be investigated all materials should be considered by a general committee of the Senate as a principal investigation rather than as a side issue by another and ungermane investigating committee.

In objecting to the Calder committee picking on the coal men Senator Sutherland declared in the Senate that profiteering investigation should be of a general nature, to include all materials. He said it was popular for states which are entirely consumers of coal to jump on the coal man and yet there were instances of many products, no doubt, in these states that might bear the same scrutiny with the same result. He would be glad to see New York and other states get coal at low prices. The Senator insisted that most of the high prices did not involve coal operators, as the coal situation during the past year was largely brought about by a buyers' market. The coal scarcity due to the car shortage, caused buyers to go to operators and offer them one price after another until the price was up to a point where sometimes the operator was almost ashamed to take the money. "They did just as other people did who are in business—take what the traffic offered," the Senator said.

### PROFITEERING IN SELLING OF ALL MATERIALS

Senator Sutherland pointed out that the cost of fuel was an insignificant item in the cost of building operations and as profiteering had been going on in all kinds of materials it was not fair that the inquiry be directed solely to coal and that the operator be singled out. "He is not more guilty than are a great many other producers of commodities," the Senator said.

Senator Kenyon, of the Calder committee, said it was trying to catch them all.

Continuing, the West Virginia Senator said that while in some cases prices were no doubt higher than they should have been and many of them recognized the fact that it was an unwholesome condition of trade that prices should be so high, yet a vast volume of the coal business was not carried on at high prices. A major portion of the coal produced was sold at moderate prices on yearly contracts, he said.

Senator Sutherland said that many operators during the war were selling coal on 3- and 5-year contracts at prices on which they lost money. A conclusion as to profiteering should not be based on one instance in which perhaps some individual charged an excessive price. "If the Senate is going into that," Senator Sutherland said, "the entire subject should be brought out by some committee which justly has that question before it as a principal inquiry rather than as a side issue of an inquiry into building conditions."

Senator Calder insisted that a price of \$9.12 for coal which it cost \$2.80 to produce could not be defended. When the committee closed its inquiry into coal it would report the facts to the Senate and also report legislation, which would go to some standing committee of the Senate "which if it wishes can go over and check up what we have done," he said. Continuing, Senator Calder charged that the National Coal Association assisted in preparing priority orders for the Interstate Commerce Commission that had actually destroyed contracts for coal to the Northwest, causing an increase of \$2 and \$3 in the price for that territory.

Senator Sutherland said he did not defend unfair prices on any products, but declared "it is just as unpleasant to go into a clothing store and buy for \$100 a \$30 suit of clothes

made in New York as it is to buy for \$9 a ton of coal that perhaps cost only \$4 at the mines." Senator Calder said he would join in an effort to punish those who attempt undue profits.

Senator Sutherland contended that the question was of such broad scope, covering practically every industry, that he did not like to see one industry singled out because it is a popular thing to jump on the coal operator, who certainly receives more than his share of abuse.

Senator Calder said the committee had sent to the Navy Department the hearings so that it might have the record on War Department purchases when effort was made to collect from the Navy Department in the Court of Claims \$7 for coal on Navy commandeering orders. Senator Calder added that there were no charges before the committee involving the integrity of any government official, and he also did not think it fair to blame Colonel Wentz entirely, as it was largely the government's fault in the way the War Department coal was ordered.

### SUGGESTS THAT NAVY BUY COAL FOR ARMY

Senator King said it suggested the efficiency of the navy system of buying coal and he would recommend that the navy buy coal for the army. Senator Calder thought some government department or officials ought to purchase all coal for all departments, which would provide a uniform system and enable the government to buy coal at moderate prices.

Senator Borah of Idaho objected to this plan because he said the operators would soon control the particular individual charged with coal purchases and do it more successfully than if there were half a dozen who had control of purchases.

Senator Kenyon said persons from whom coal was commandeered by the navy were going to the Court of Claims for additional money for the coal and the War Department prices would be admissible as evidence bearing on the question of fair price for the coal. He charged that the people had been robbed on coal to the extent of hundreds of millions of dollars.

Senator Pomerene referred to coal at 90c. a ton in Ohio a few years ago and a statement of Cleveland operators before the war that they would be satisfied with a profit of 10c. a ton which he contrasted with the 50c. a ton commission authorized by the War Department. Senator Kenyon said the Fuel Administration had fixed 15c. a ton as a fair commission to purchasing agents. Senator Jones of Washington said the developments before the committee would overturn any suggestion that the Court of Claims would consider the War Department prices as controlling in navy cases.

### Palmer's Staff to Conduct Coal Inquiry; Senate Committee Submits Evidence

**I**N THE absence of Attorney General Palmer, Assistant Attorney General Frank K. Nebeker, in charge of prosecutions, said on Jan. 8 that the Department of Justice had received the report of the testimony before the Calder committee of the Senate requesting action. Mr. Nebeker said he believed that there had been enormous profits in coal and that the department would commence an immediate investigation and enter vigorous prosecutions if necessary. It was said that about twenty-five coal companies were involved, but their names were not divulged.

In the Senate, Senator Borah, of Idaho, asked what the Senate was going to do about the coal situation if it got the facts. "The committee plans to recommend legislation," said Senator Calder, "and is now preparing bills and hopes to present them next week."

Senator Borah asked if there was any law at present under which prosecutions could be had. Senator Calder

### October Freight Car Performance Only Once Surpassed

**F**REIGHT car performance statistics just compiled for October by the Bureau of Railway Economics show that the average daily movement per freight car during that month was the greatest for any month in the last four years with but one exception.

The average for the month was 28½ miles, an increase of two-fifths mile over the figure for the preceding month. The October mark was higher than that for any month of government control and was passed in the last four years only in May, 1917, when an average of 29 miles was attained.

During October, 1919, the average was 27½ miles, while during the same month in 1918 it was 26½ miles. Each increase of one mile in the average movement of a freight car is equivalent to the addition of 100,000 freight cars to the country's transportation facilities, so that the gain for October over the previous month is equivalent to the addition of 40,000 cars, or 120,000 cars compared with October last year.

While the net ton miles total was smaller than that for August, the number of cars loaded with revenue freight during October amounted to 4,979,377, the greatest number loaded during a similar period in the history of American railroads.

said the Lever law could be invoked if the Department of Justice would take up the matter. He said the committee had sent to the department information concerning the recent revelations and suggested that prosecutions be begun at once.

Senator Overman, of North Carolina, asked if the Secretary of War had explained the War Department coal purchases. Senator Calder said the committee had heard his subordinates but the Secretary had not asked to appear, although the committee would be glad to hear him if he desired to appear.

Senator Poindexter asked if the committee had investigated whether there had been any violation of the criminal laws. He recalled that a few years ago some prominent coal dealers of the Pacific Coast were imprisoned for the acts which the Senate committee had now discovered, or perhaps it involved a conspiracy to boost prices. Senator Poindexter said it was a peculiar situation for the War Department to pay more than the market price, which tended to increase prices to consumers, without anybody being to blame. Senator Calder said the committee was submitting the testimony to the Department of Justice with the request that it inquire thoroughly into the question of whether or not any criminal act had been violated.

### Asking Continuance of Lever Act, Navy Reveals Prices Paid for Coal

**N**OTING the Senate committee's investigation of coal prices Secretary of the Navy Daniels has issued the following statement showing prices paid for Navy coal and asking that the Lever Law be continued in order that the Navy may continue commandeering orders:

"According to published reports of the evidence recently adduced before the Senate Special Committee on Reconstruction and Production it appears that the coal trade has grievously imposed upon the public; whereas, in direct consequence of the authority conferred by the several statutes granting war-time commandeering powers this department has been enabled to avoid the profiteering prices demanded by the suppliers.

"The records show that without the commandeering power conferred by the Lever Act and the several kindred statutes, the Navy might not have been able to maintain its fuel supply at any price, as repeated efforts to secure competitive bids were without avail.

"As it was the coal supply has been at all times main-

tained, the suppliers being allowed the full cost of production plus a fair margin of profit in each case as follows:

	Pennsylvania Field Per Net Ton	West Va. Field— New River Pocahontas Per Net Ton
October, 1917.....	\$2.00	\$2.15
April, 1918.....	2.60	2.15
May 10, 1918.....	2.60	2.35
May 28, 1918.....	2.50	2.25
July, 1918.....	2.95	2.70
July, 1919.....	3.03	2.85
September, 1919.....	3.03	2.85
November, 1919.....	3.33	2.85
December, 1919.....	3.33	3.10
April, 1920.....	3.79	3.57
August, 1920.....	4.24	3.57
September, 1920.....	4.24	3.93

"As evidence of the just compensation afforded, a large majority of the suppliers concerned have in writing accepted the prices fixed as satisfactory.

"The extent to which the Navy has avoided the payment of the profiteering prices demanded elsewhere is shown by the fact that more than 7,000,000 tons of coal have been obtained under requisitioning orders and at the prices herein stated.

"In view of the successful operation of the Lever Act as applied to the maintenance of the Navy, continuation of authority at present vested in the Navy Department is vitally important, certainly at least until peace has been formally declared."

### Federal Fuel Yard Points Out Benefits of Centralizing Government Fuel Buying

**I**N connection with the Calder probe into coal matters statements have been published which have created the impression that the government has been an easy victim for operators who would charge exorbitant prices for their product. That this was not the case with respect to coal handled through the Government Fuel Yard is set forth in a letter from E. A. Holbrook, assistant director of the Bureau of Mines, to Senator Edge of New Jersey, one of the members of the committee. In that letter Mr. Holbrook says in part:

"Last spring, after advertising twice for the estimated yearly requirements of 250,000 tons of bituminous coal, the Government Fuel Yard received only 45,000 tons under contract. The government's needs in the District of Columbia have been met at prices ranging from \$4.25 to \$5.50 per ton f.o.b. mines in the face of the serious coal shortage and with spot prices running as high as \$13 per net ton f.o.b. mines.

"It is my belief that by centralizing under one agency the government coal purchases throughout the United States, as proposed by this measure [a bill providing for uniform selection and purchase of fuel, which it is proposed to introduce in Congress], economies would result, as indicated by the accomplishments of the Government Fuel Yard in the purchases for the District of Columbia. Furthermore, it should be possible to realize enormous savings in the more efficient utilization of coals through the selection by the trained engineers of the Bureau of coals particularly adapted to the power plant equipment and by improved methods of firing and operating furnaces."

### Cancels Service Orders Nos. 1 and 13

**H**OLDING that the orders no longer were needed now that railway congestion has been so greatly reduced, the Interstate Commerce Commission on Dec. 30 announced the cancellation of Service Orders Nos. 1 and 13. The cancellation became effective Dec. 31 at midnight.

Service Order No. 1 provided that railroads should forward traffic to destination by the routes most available to expedite its movement and relieve the congestion existing at the time the order was issued. The railroads were ordered at the time to disregard the routing of shippers or the ownership of cars.

Service Order No. 13 provided that the railroads remove from cars and restore grain either in their own depots or warehouses at or near Galveston at the cost of the owners. This action was taken to expedite the movement of cars used for grain shipment.



# The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

**U**NDoubtedly the foremost question in the collective mind of commerce and industry today, according to the Mechanics and Metals National Bank of the City of New York, is how long the present depression will last, whether it will become more severe, and what time will mark the beginning of a revival. The answers to these questions depend upon a multitude of factors, psychological as well as economic, and answers cannot be given with any finality. But we do know that trade cannot remain long in its present position.

The present under-buying, like the preceding over-buying, will in time work its own cure. Purchases of the great mass of goods may be postponed, but they cannot stop. The longer they are put off, the more the demand must accumulate, and the greater it must be when resumed. The ultimate demand for some leading commodities is now underestimated, and the prices of these may shortly be expected to recover somewhat.

Much that is now being said and written assumes that the present unemployment, brought about by falling prices, will itself be a cause of still lower prices, because it diminishes purchasing power. What is overlooked in this line of reasoning is that unemployment means lessened production. As a factor making for a recovery in prices, this more than offsets diminished purchasing power. For while the unemployed cease altogether to produce, they cannot cease to consume. They must continue to buy necessities for themselves and their families; and if they have no accumulated savings, they will go into debt. Lower wages for those remaining at work mean lower purchasing power; but they also mean lower production costs, and manufacturers can afford to sell more cheaply. Lower wages, therefore, will not in the long run adversely affect the actual volume of goods purchased.

## Automobile Plants Reopen

The Studebaker Corporation announced Jan. 4 that it would start work again on Jan. 10 at its plant in South Bend, Ind., working on a schedule of ninety automobiles a day. This will be increased gradually until the output reaches 500 cars daily, it is stated. On the same date a six-day working week was to go into effect at the Detroit plant of the corporation. The plant had been operating three days a week. The Nash Motors factory at Kenosha, Wis., employing about one thousand men, expects to reopen this week. The Packard Motor Car Co. plant at Detroit closed several weeks ago, reopened in some departments Jan. 3 with several thousand men on part time.

## Interwoven Mills on Full Time

The Interwoven Mills, Inc., employing 1,600 men and women, reopened on full time Jan. 3 after three weeks' idleness. Company officials said that continuance of

work on full-time schedule depended upon developments in the industry.

## Asheville Cotton Mills Reopen

The Asheville Cotton Mills, Asheville, N. C., which suspended operations several weeks ago, resumed full operations Jan. 3. The plant is the largest of its kind in its section.

## Locomotive Plant for St. Louis

The American Locomotive Co., it was reported Jan. 4, is working on plans for the construction of a new plant in the St. Louis industrial section which may ultimately lead to the expenditure of \$25,000,000. Belief that the demand for locomotives during the next few years will be more than sufficient to tax the capacity of its present facilities is understood to be back of the present expansion program.

## Shirt and Collar Factory Resumes

After a three weeks' shutdown the Cluett-Peabody plant at Troy, N. Y., resumed operations Jan. 4 on a five-

days-a-week basis. Several thousands are employed at the plant. There was no change in the wage scale for the present.

## Rubber Companies Speed Up

Early last week officials of the Master Tire & Rubber Co. announced that they intend to have their plant going with a full force before the end of the week. Increased orders and a "return to normal conditions" was given as the reason for increased production. The Federal Rubber Co. plant at Kenosha, Wis., employing about one thousand men, expects to resume operations this week. The Republic Rubber Corporation planned to resume operations Monday, Jan. 10, and by next week will be in full operation. The tire, tube and solid tire departments will resume on three eight-hour turns on Monday, Jan. 17. Orders have been piling up since the plant shut down on Dec. 23 for inventory and repairs. These orders are expected to keep the plant in operation for some time.

## N. Y. Central Shops Reopen

Nine hundred car workers, employed at the West Albany shops of the New York Central Railroad, who were laid off on Dec. 23 when the shops were closed for an indefinite period, returned to work there Monday, Jan. 3.

## Rochester Plants Take on Workers

With the volume of orders for the spring trade steadily growing larger, Rochester's clothing and shoe factories, employing together about 14,000 workers, are gradually taking back their normal force of employees. The president of the Rochester Clothiers' Exchange predicts that within two weeks all the clothing factories will be running with full forces.

## Factories Re-employ 1,300 Hands

More than 1,300 employees of industrial concerns in Springfield, Mass., that have recently been closed resumed work Jan. 3 when the factories reopened. Most of the firms affected had been closed for inventory, which was prolonged owing to prevailing conditions. The Boston & Albany railroad car repair shops in West Springfield reopened after a week's shutdown, re-employing 80 per cent of the one hundred former workers. No pay reductions have been announced.

## Maine Mills Increase Working Time

Beginning Jan. 11 the Pepperell mills in Biddeford, Me., and the York mills in Saco, employing together 6,000 hands, increased their working schedule to four days a week. For a month they had been running only three days.

### To Prosecute Coal and Building Material Interests

VICES from Washington late Jan. 10 were to the effect that the Department of Justice contemplated prosecutions under the anti-trust laws against coal operators and dealers and building material interests. William J. Rand, of New York, has been appointed to prosecute these cases. It was stated that Mr. Rand would make a careful study of the data furnished the department by the Calder committee.

### Colonel Wentz in Letter to C. L. Watkins Corrects Unjust Inference

TO CORRECT a mistaken inference that had been drawn from his testimony before the Calder committee, Colonel D. B. Wentz on Jan. 7 sent the following letter to C. Law Watkins, president of the Watkins Coal Co.:

"I notice in the newspapers that an entirely unjust inference as to the Watkins Coal Co. is being drawn from my testimony before the Senate Committee on Reconstruction yesterday [Jan. 6], the inference being to the effect that the Watkins Coal Co. made something like \$6.00 per ton on coal sold to the government.

"I testified to no such thing, but said that the Watkins Coal Co. did sell some coal to Wentz Company at about \$9.25 per ton. Testimony was introduced to the effect that the Watkins Coal Co. produced certain coal for about \$3.25 per ton. I did not say, however, and it is not true, that that company sold any coal to Wentz Company or to the government that cost it only \$3.25 per ton to mine. I have investigated the matter and find that the coal which it did sell to Wentz Company for the Government was coal that it purchased in the open market and which cost the Watkins Coal Co. approximately \$9 per ton. The Watkins Coal Co. sold the coal to Wentz Company for approximately \$9.25 per ton and Wentz Company shipped it on its Government contract. The Watkins Coal Co. therefore made 25c. per ton on said sale, a profit which certainly no one can call unreasonable. Coal which that company produced at \$3.25 per ton it sold to its own customers on contract at a very reasonable profit.

"I wish to correct any misunderstanding that may have been caused by my testimony."

### Boston Fuel Administrator Asks Cut in Price of Anthracite Coal

MASSACHUSETTS coal dealers were told to cut the high prices of recent months in a communication from Fuel Administrator Eugene C. Hultman, of Boston, dated Dec. 28. Asserting that the retail price of anthracite coal in many communities was excessive, the Administrator said that there was no justification for continuance of high prices and he requested a prompt readjustment.

"Numerous complaints of exorbitant charges for coal are being received by this commission," the communication said. "Retail prices have gone as high as \$18 to \$24 a ton in some communities.

"So-called 'company' coal remains at approximately \$8 per gross ton, with a large amount of 'independent' coal being shipped to Massachusetts for about \$1 above this price."

SHIPMENTS OF BITUMINOUS COAL through the "Soo" Canals during the season of 1920, according to statistics compiled at St. Marys Falls Canal, Michigan, under the direction of Lieutenant Colonel E. M. Markham, Corps of Engineers, U. S. Army, amounted to 12,096,993 net tons, an increase of 635,031 net tons, or 6 per cent, compared with 1919. Anthracite shipments through the canals during the last season totaled 2,059,266 net tons, a decrease of 353,723 net tons, or 15 per cent, compared with the previous year.

### Federal Reserve Board Reports Bituminous Production on a High Level

IN ITS review of business conditions during December the Federal Reserve Board has the following to say as to coal:

"Production of bituminous coal has continued upon a high level. The November figure was 51,012,000 tons, corresponding to an index number of 138, as compared with 50,744,000 tons during October and 18,688,000 tons during November, 1919, the respective index numbers being 137 and 50. The output for the week ending Dec. 4 set a new high record for the year, but was bettered during the following week. This was in spite of the fact that on Nov. 29 the priority in the use of open-top cars was withdrawn completely. Demand is not as insistent, with the lessened activity in various industries, and there has been a marked falling off in the export trade in particular during the past two months.

"Production of anthracite coal during November was 7,519,000 tons, as compared with 8,188,000 tons in October and 7,870,000 tons in November, 1919, the respective index numbers being 102, 111 and 106. There has been virtually no loss of time from transportation difficulties. Efforts of the fair-price committee are reported from District No. 3 (Philadelphia) to be holding down mine prices to a fair margin of profit above cost of production and to have been limiting the rehandling of coal by wholesalers. The market is becoming more steady and complaints of shortages from Eastern cities are becoming less numerous.

"Coal production has increased in the Atlanta district. In the coal mines of Missouri, Kansas, Oklahoma and Arkansas the percentage of unemployment is less than during preceding months. The situation in the coal mines of Colorado is said to be good."

As to prices the board says: "Coal prices remained largely unaffected. Coal prices are reported as easier in December. Contract quotations on leading grades of anthracite and bituminous for November, however, were at the same high level as in October."

### Pennsylvania Coal Co. Miners Threaten to Strike if \$10,000,000 Is Not Promised

IF BY JAN. 15 the Pennsylvania Coal Co. has not filed an answer to the demand for \$10,000,000 in back pay the mine workers intend to go on strike. They say that they have obtained 140 affidavits at great trouble and expense and that Captain W. A. May, president of the Pennsylvania Coal Co., promised them careful consideration of the matter and an answer to the allegations, but has not made any reply.

Apparently the miners were under contract to give 2,700 lb. for a ton of coal, that being the figure which, according to the company's calculations, would yield 2,240 lb. of prepared sizes after the dirt and fine coal had been separated. Under the terms of a later agreement the requirement was that in estimating the amount of coal actually recovered not only the prepared sizes but the pea should be included.

Docking was to continue and in this the company's docking boss and the men's docking boss were to collaborate. However, it was agreed that if the railroad rates proved that the company did not get the 2,240 lb. of coal for every 2,700-lb. ton it paid for, the miners would accept a proportionate reduction, while if the railroad scales showed an excess the mine workers' weights should be proportionately increased.

Four miners employed at Schooley colliery have made an affidavit that they were paying \$10 to their boss every two weeks in order to hold their jobs. These statements the men declared must be investigated with the others.

A statement has been made by John Ruane, chairman of the general grievance committee of the mine workers, that the contention of the miners that they have been given short weight will be taken to the Luzerne County Court for determination if redress cannot be obtained in any other way.





# Foreign Markets and Export News



## France Insists on Fulfillment of Spa Coal Terms

France will insist upon strict fulfillment of the Spa agreement concerning coal deliveries by Germany, according to an official circular just issued in Paris. The attention of Germany has been called to a shortage of 500,000 tons up to the end of the year.

Germany says she will be unable to make up the deficiencies in the ensuing three months, as requested by the Reparations Commission, alleging that the effect of the large coal deliveries on the economic situation of Germany is such that Germany will be unable to continue to deliver coal even at the same rate that she has been doing since August last.

## Coal Exports Increase Fivefold in a Year

Exports of anthracite and bituminous coal and coke as reported by the Department of Commerce for November, 1919, and the figures for November, 1920, as finally revised, are as follows, in gross tons:

	Nov., 1919	Nov., 1920
Anthracite.....	320,719	333,265
Bituminous.....	713,650	3,567,136
Exported to:		
France.....		741,437
Italy.....	45,933	214,778
Netherlands.....	36,950	195,391
Sweden.....	16,247	39,126
Switzerland.....	17,417	22,173
Canada.....	335,641	1,459,373
Panama.....	8,482	3,644
Mexico.....	8,932	21,543
Br. West Indies.....	8,174	26,205
Cuba.....	59,835	117,976
Other West Indies.....	2,171	18,510
Argentina.....	19,954	107,048
Brazil.....	14,699	115,295
Chile.....		84,150
Uruguay.....	17,653	34,087
Other countries.....	121,562	366,400
Coke.....	66,873	85,443

## Cancellations of French Contracts Cause Heavy Losses

French government and commercial officials say that France has a surplus stock of coal sufficient to supply all her needs for the next six months. American coal contracts involving over \$100,000,000 have been canceled. American coal c.i.f. French ports has fallen from \$32 to \$12.50 within the last two months.

All French railways and public service companies are heavily stocked with coal and foreign purchases have almost ceased. Perhaps 50 per cent of the American contracts will be renewed on the basis of \$14@ \$15 a ton, according to official opinion. The French government will very likely have to stand the loss incurred by the overstocking through a reduction in the price and when the agreements have been adjusted American coal interests will have lost approximately \$50,000,000 in contracts. A reduction in coal prices has just been announced ranging from 70 to 75 francs per ton during January, the French government reimbursing the various departments for losses entailed through selling at this new price coal bought at a premium.

French coal importers, in commenting on the situation, lay the cause to three elements—fulfillment of the Spa agreement by the Germans, industrial contraction due to the depression and the unusually mild weather that has prevailed. They see coal shipments from the United States practically discontinued for the next five or six months.

A recent arrival of American coal at Havre, amounting to 6,000 tons sold at auction for 70 francs, a price less than sufficient to pay the freight. English coal is now being offered at 70 shillings, a decline of more than 25 per cent.

It has been suggested that France will agree to a tem-

porary reduction in the amount of coal to be delivered under the impending renewal of the Spa agreement.

Officials of the French National Bureau declared that the manner in which Germany has lived up to the Spa coal agreement by delivering virtually all the coal demanded came as a big surprise to the French government. In the belief that Germany would not fulfill the terms France encouraged her import firms to purchase all the coal they could, while the government itself bought heavily in the United States and England. In consequence of this there are at the present time from 12,000,000 to 15,000,000 tons of coal in France.

## Japanese Coal Being Contracted; Figures Advanced

Since writing a fortnight ago, according to Wheelock & Co.'s market report issued at Shanghai, Dec. 2, sellers have issued their prices for 1921 requirements and the majority of the larger consumers have closed their contracts at prices considerably higher than those for last year. This is entirely due to exchange which shows a drop of about 100 per cent as compared with last year. Although prices are lower in Japan than they were a year ago, they are not low enough to compensate for the enormous difference in exchange.

No change is reported in the Fushun market.

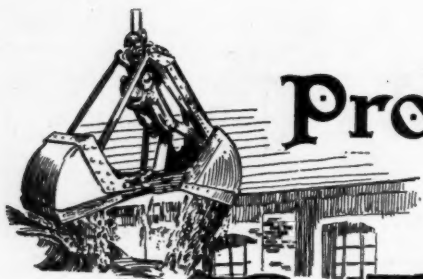
Some large contracts for Kaiping coal have just been fixed for 1921 at slightly advanced prices. There are indications of a shortage in washed coal. Temporary congestion of tonnage is again being experienced at the port of loading due to shortage of rolling stock between the mines and Chinwangtao.

Coal prices are quoted as follows:

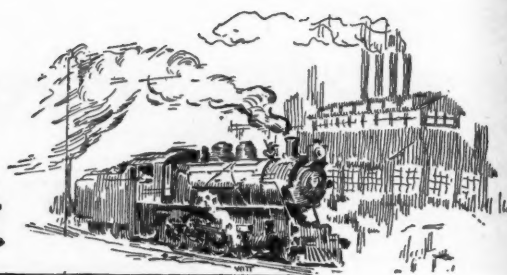
JAPAN COAL	
Miike Lump.....	Contracted for
Miike Small.....	
Miike Dust.....	
Kishima Lump.....	Taels
Shakano Lump.....	per Ton
Arate Lump.....	ex-Wharf
Shimoyamada Kirigomi.....	15.00
Shin Shakano Kirigomi.....	13.00
Yoshinotani No. 1 Lump.....	12.00
Yoshinotani No. 2 Lump.....	11.00
Ochi Lump.....	12.00
KAIPING COAL	
No. 2 Lump.....	13.50
Washed Nuts.....	13.50
Washed Slack.....	10.50
No. 1 Slack.....	9.00
No. 2 Slack.....	8.50
FUSHUN COAL	
Dust.....	11.00
Dust Kirigomi.....	Contracted for
Dust Lump.....	

MINERS IN THE RUHR DISTRICT of Germany have decided to deprive Bavaria of coal as a step toward forcing Bavaria to disarm the civil guards, the disbandment of which has been demanded by the Allies, says a Berlin dispatch to the *Matin*, quoting the *Rhenish Journal*, a Socialist organ. This action practically means that the miners are tired of the Government's dilatory way of treating the disarmament question and themselves have taken the bull by the horns, since the continued existence of the civil guards exposed the Ruhr district to sudden French invasion.

THE SOUTH WALES COAL MARKET is depressed and idle. Best Admiralty steamless is quoted at £3 10s. to £3 15s.; best smalls £2 10s. One Welsh colliery recently sold inferior dry smalls for ballast at 7s. 6d. per ton to vessels bound to New Zealand.



# Production and the Market



## Weekly Review

**I**NACTIVITY marks the coal trade now. At least 10 per cent—if not more—of mine capacity is closed through lack of orders for coal. The closing is complete on the part of a large number of small operations, but is limited to a few hours or days per week in the case of other mines. The fact that in the week of Dec. 25, 1920, time lost on account of no market by mines reporting to the U. S. Geological Survey was nearly as great as the reported loss on account of car shortage indicates the transition that is taking place.

No one should consider as permanent the extremely low prices at which spot coal is being moved today, nor is it to be expected that producers will contract at these figures. In some instances now low levels were reached last week, but only where forced sales were made to maintain production or to dispose of shipments on consignment. Most producers have named figures which they will accept for their coal, and when they are unable to obtain these prices they are closing or curtailing operations, refusing to continue mining coal at a sales price below cost of production.

### ADVANTAGEOUS TO PLACE ORDERS NOW

Now is the time for the buyer of spot coal to take all that can be stored, as there is no possibility of the general range of prices going lower than it is at the present time. As a matter of fact, orders are now being taken for delivery sixty to ninety days hence at

figures substantially higher than present market quotations.

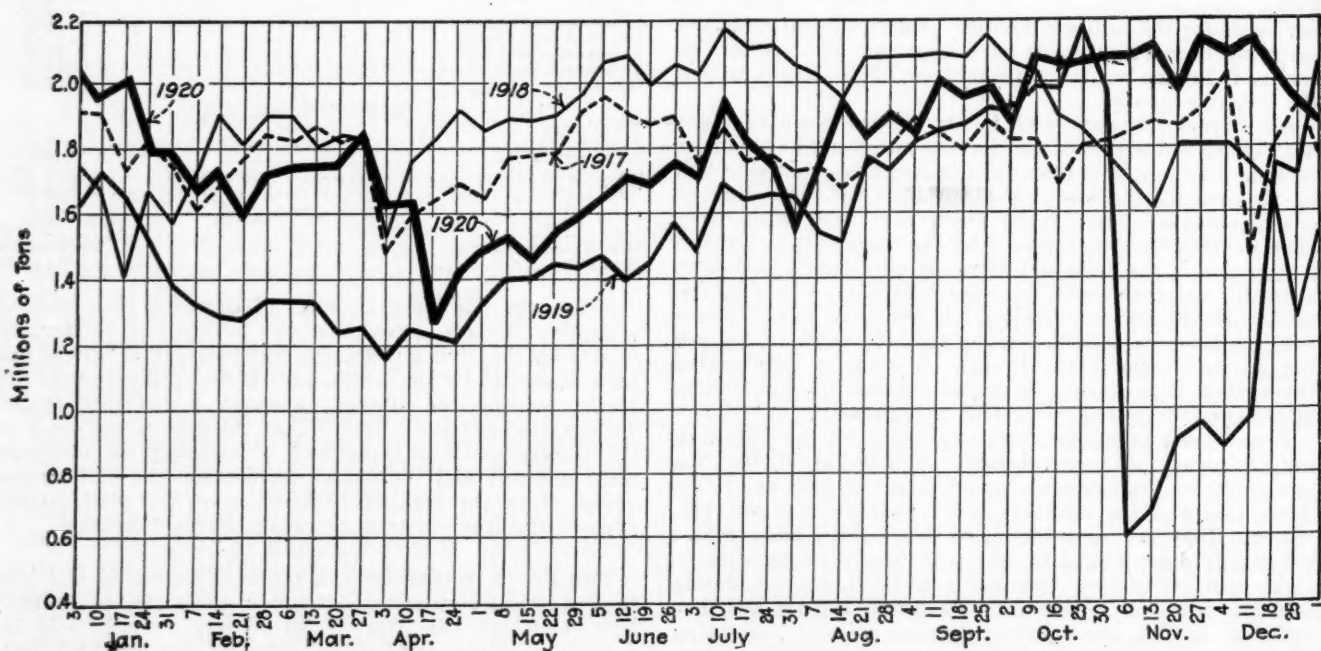
Lake buyers are once more in some of the market centers. As it is usually February before much of this business puts in an appearance the opinion is expressed that this may have a tendency to stimulate buying for present and future needs. In some sections of the Middle West resumption of manufacturing and other industrial activity is further encouraging the trade in its outlook for the coming season.

### GOOD WEATHER IS HELPING DISTRIBUTION

Anthracite production is being fairly well maintained. Domestic sizes continue in strong demand. Distribution is being made at top speed, as weather conditions are good and the general freight movement light. Independent producers are no longer readily obtaining the premiums they formerly got for their domestic grades and in some centers the price has weakened further from quotations of a few days ago. Steam sizes are becoming troublesome to market and further price concessions were made last week.

Coke operators have accepted the present market situation with the best possible grace and have further restricted merchant production, signifying a general willingness to follow the rest of the country in the readjustment program now in progress. Prices for spot coke remain unchanged.

Daily Average Production of Bituminous Coal\*



\*From weekly report of Geological Survey.



## BITUMINOUS

Production of soft coal during the last week of the year amounted to 9,571,000 net tons, according to the U. S. Geological Survey, or 112,000 tons less than the figure for the preceding week. Total production attained in the calendar year 1920 was about 556,516,000 tons. The year's output was greater than during any year except the war maximum of 1918.

Many mines which closed just before the Christmas holidays are still idle, apparently waiting for a more profitable market before resuming work. In the central Pennsylvania district at least 40 per cent of the mines are temporarily out of operation; in other fields the percentage is not so heavy, but everywhere "no market" losses are increasingly apparent.

Cars were plentiful during the week ended Jan. 1. The short operating week, of course, made for a more abundant supply, but even considering this factor it can be said that production did not lag through losses attributable to car shortage. In many sections cars were altogether too plentiful, many "left-overs" being reported at the close of nearly every operating day. Transportation conditions were excellent and cars moved swiftly to destination.

Labor is entirely adequate in all mining fields, although certain interests in the strike centers of West Virginia and Alabama might take exception to that statement, but even in those regions losses attributable to the strikers are waning fast and are practically no bar to marketable production. In some sections where market conditions are dullest labor is unable to obtain enough working time to cover expenses of living, but both operators and labor are optimistic of the future and are awaiting readjustment of prices and conditions.

## SOME OPERATORS CONTINUE PRODUCTION AT LOSS

Spot prices apparently have reached rock bottom. Prior to this nearly all small operations mining coal at higher costs had been forced to close. Forced sales of coal continue, some mines preferring to maintain their operations even at prices that have reached and in some case gone below their production costs. Some coal also is being sold on consignment, although this procedure invariably is a costly one for the producer. As indicated by current market reports, good grades have rallied slightly—that is, the price range is not as wide as had existed during the preceding few weeks. Many operators refuse to continue forcing their production upon a sluggish market, preferring to curtail operations where a fair price is not obtainable. Apparently consumers are still drawing heavily on their high-priced reserve stocks or else are in the market for only current needs. Domestic demand is slipping, due to the abnormally warm weather which has prevailed the past few weeks. Householders are not buying except, as in the steam market, on a day-to-day basis, and this is reflected in cancellations of orders by retail dealers. The overseas market shows no signs of an early strengthening. Keen competition of all-rail coal is causing a reduction on the higher priced coal on Northwestern docks.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mines):

	Nov., 1919*	May, 1920	Aug. 5, 1920	Dec. 30, 1920	Jan. 6, 1921	Jan. 13, 1921†
Pittsburgh steam.....	\$2.35	\$4.00	\$10.00	2.75	\$2.60	\$2.50
Pittsburgh screened gas	2.35	4.50	12.00	3.25	3.15	3.15
Hocking.....	2.50	4.75	9.00	2.50	2.50	2.50
Franklin, Ill.....	2.35	3.75	6.50	3.40	3.00	3.00
Indiana 4th vein.....	2.35	3.40	7.50	3.25	2.75	2.75
Eastern Ohio, No. 8...	2.35	4.50	10.50	3.00	2.75	2.75
Fairmont.....	2.50	6.75	13.50	2.75	2.40	2.20
Kanawha.....	2.60	6.75	14.00	3.00	2.80	2.70
S. E. Kentucky.....	3.00	6.00	10.50	3.40	2.90	2.80
Western Kentucky.....	2.35	3.50	5.25	2.75	2.60	2.60
Clearfield.....	2.95	6.25	12.00	3.75	3.25	3.00
Cambria and Somerset.	2.95	6.75	13.50	4.65	4.35	3.60
New River.....	2.70					
Pocahontas.....	2	6.50	14.00	4.75	4.50	4.50

\*Government prices.

†Advance over the previous week shown in heavy type, declines in italics.

The all-rail movement to New England in the week ended Jan. 1 was maintained at about the same rate as during the preceding week. According to the U. S. Geological Survey the total number of cars forwarded through the five rail gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville was 4,779.

## Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY  
(NET TONS)

## BITUMINOUS COAL

Total bituminous, including coal coked  
ANNUAL PRODUCTION FOR CALENDAR YEAR

	Production	Average per Working Day
1917.....	551,790,000	1,794,000
1918.....	579,386,000	1,880,000
1919.....	458,063,000	1,485,000
1920.....	556,516,000 <sup>a</sup>	1,805,000

WEEKLY PRODUCTION—CHRISTMAS WEEK <sup>b</sup>

1917 (Dec. 23-29).....	9,737,000	1,947,000
1918 (Dec. 22-28).....	6,343,000	1,269,000
1919 (Dec. 21-27).....	8,531,000	1,706,000
1920 (Dec. 19-25).....	9,683,000 <sup>c</sup>	1,937,000

NEW YEAR'S WEEK <sup>d</sup>

Ended Jan. 5, 1918.....	9,312,000	1,757,000
Ended Jan. 4, 1919.....	8,459,000	1,596,000
Ended Jan. 3, 1920.....	11,062,000	2,087,000
Ended Jan. 1, 1921.....	9,571,000	1,849,000

(a) Subject to revision. (b) Five-day week. (c) Revised from last report. (d) Counting New Year's Day in 1918, 1919 and 1920 as equivalent to 0.3 of a working day; in 1921, to .17 of a working day.

## ANTHRACITE

	1920	1919 <sup>a</sup>
	Week	Coal Year
Dec. 18.....	1,979,000	64,918,000 <sup>b</sup>
Dec. 25.....	1,626,000	66,544,000 <sup>b</sup>
Jan. 1.....	1,582,000	68,126,000 <sup>b</sup>
	Week	Coal Year
Dec. 18.....	1,979,000	64,918,000 <sup>b</sup>
Dec. 25.....	1,626,000	66,544,000 <sup>b</sup>
Jan. 1.....	1,582,000	68,126,000 <sup>b</sup>

(a) Less 2 days' production during first week of April, to equalize number of working days covered for the 2 years. (b) Revised to agree with Weekly Report No. 178, pages 2 and 7.

## BEEHIVE COKE

United States Total

	Week Ended	Calendar	Calendar
Jan. 1 <sup>c</sup>	Dec. 25 <sup>b</sup>	Jan. 3 <sup>a</sup>	Year 1919
1921	1920	1920	Year 1920
280,000	279,000	398,000	20,833,000
			19,650,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

## ANTHRACITE

During New Year's week the output declined slightly, being estimated at 1,582,000 net tons by the U. S. Geological Survey. Compared with Christmas week this was a decrease of 44,000 net tons, although it was considerably heavier than the output for the corresponding week of 1919.

Preliminary estimates based on records of cars loaded, as reported by the Geological Survey, indicate that the total production of anthracite for the calendar year 1920, including mine fuel and sales to local trade, was 89,100,000 net tons, an increase over 1919 of about one million tons, or 1.1 per cent.

Domestic sizes at the company schedules are easily marketed, but further price concessions are noted on independent coals. Company schedules on stove and nut have been increased 10@15c. Steam coal from both sources is becoming troublesome to move and while company figures are well maintained much effort is necessary to market the independent steam product.

## COKE

Production of beehive coke during the week ended Jan. 1 was practically the same as during the preceding week, being estimated by the U. S. Geological Survey at 280,000 net tons. Production during 1920 was 20,833,000 net tons, against 19,650,000 tons in 1919, an increase of 6 per cent.

Connellsville quotations on the spot market are unchanged, \$5.25@5.50 per net ton for furnace and \$7@7.50 for foundry at ovens. Operators are in quite comfortable position and while they naturally desire a resumption of activity they are not disposed to attempt to force its coming by any unnatural means, knowing that in due course it will come of its own accord.

Following a brief period of contracting on a five-to-one basis for furnace coke no further interest has been manifested in agreements for the first half of the year.

## Reports From the Market Centers

### New England

#### BOSTON

*Railroads Still Offering Coal—Receipts Steadily Diminish—Tidewater Coal Goes Begging—Minimum Prices Set by Some Operators—Anthracite Situation Easier—Delivery Limits Removed.*

**Bituminous**—The current market shows no change for the better. There is still enough pressure to sell to hold prices well down to a minimum and not in any direction thus far has there appeared much sign of sustained recovery in industrial lines.

Certain of the railroads here are making strenuous efforts to dispose of coal on cars, both rejected and shipped on the market, and there are more than a few cases where car contents have been sold for the charges. All the carriers are more than amply supplied with fuel and it is difficult to see how this area can be made to absorb much more spot coal. Operators who have contracts with New England consumers are finding it more and more difficult to persuade the latter to accept deliveries, so far overlaid are they with reserves that will carry for months to come. The recklessly low prices that are heard make the situation even more difficult.

The trend of the market is shown by the steadily decreasing volume of receipts. Movement all-rail is again slowing down, not this time because of poor facilities but on account of poor business. By water there is so little demand for bottoms that all manner of inducements are being offered by ship-owners to secure charters. Two dollars has been paid from Baltimore to Boston on a 9,000-ton steamer, and the same figure is reported to have been offered for a 2,000-ton barge, Norfolk to Boston.

At all Tidewater piers there is surplus coal which shippers are trying hard to place. One cargo was reported disposed of at \$6 alongside! Bids for the Cow Pasture pumping station, opened this week, showed a willingness on the part of several shippers to accept prompt business at prices ranging \$9.50 @ \$10.25 alongside for the smokeless coals from Hampton Roads.

Several operators have taken counsel of the present actual cost of mining and as a result have set minimum prices for their output for the present. Either sales agents are to return these figures or mining will be suspended. In other words it appears that in some districts prices are now about deflated and that the market is settling down to a bed rock basis.

The market at Hampton Roads is extremely quiet. Offshore demand is almost negligible and in one or two cases cargoes intended for overseas have been turned back and a market sought in this territory.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton.....	\$2.25@ \$3.75	\$3.00@ \$4.25
F.o.b. Philadelphia, per gross ton.....	5.18@ 6.86	6.02@ 7.42
F.o.b. New York, per gross ton.....	5.72@ 7.40	6.55@ 7.95

Georges Creek for forge purposes has re-appeared in the market, quotations having been made at \$5.25 per net ton at the mines. Pocahontas and New River have been sold down to \$7.50 per gross ton f.o.b. vessel at Hampton Roads.

**Anthracite**—Undeniably the situation on domestic sizes is much easier. Mild weather has so far influenced the retail demand that the volume of unfilled orders is rapidly decreasing. The Massachusetts Fuel Administrator has now authorized that in Boston beginning on Jan. 7 the 3-ton limit on deliveries shall be removed. This reflects the opinion of the trade that before many weeks there may be some canvassing for new business.

### Tidewater—East

#### NEW YORK

*Some Advance in Domestic Anthracite—More Coal Coming Forward—Bituminous Market Is Quiet—Several Piers Under Embargoes—Contracts Under Discussion.*

**Anthracite**—The situation is slowly improving. More coal is moving. The trade is optimistic of the future and believes that a couple of weeks more of mild weather will put the situation on a safe basis.

Announcement was made early last week of an increase of 10c. per ton in the prices of stove and chestnut by two of the large producers. This makes the prices of these sizes \$8 f.o.b. mine for one of the companies, and \$8.05 for the other. The latter company had on Dec. 13 added 15c. to its former prices for egg and pea.

There seems to be a feeling among trade that producers will on April 1 resume the making of a spring reduction of 50c. but no one admits they have had any such intimation from any one in authority that such a move is contemplated.

Independent coals are readily absorbed because of the constant demand,

but there is not the briskness that prevailed a couple of weeks back. Salesmen are now making the rounds of the trade. Quotations for these coals are easing slowly.

Steam sizes are becoming troublesome. It is getting harder each day to move them in connection with sales of domestic. Better grades of independent buckwheat are being quoted \$3.75@ \$4; while the cheaper grades are 25c. less. Rice is quoted \$3@ \$3.50 for the better coals while barley is hard to move, according to some shippers, at \$1.

**Bituminous**—There is not much activity here. Many loading piers have been under embargoes and there is an accumulation of coal in various directions. However, reports of partial resumption of various industries in the northern part of the state and in New England lend an air of optimism to the situation.

There are many inquiries regarding contracts from April 1 but so far none has been reported as closed. While nothing definite could be learned it is the opinion in some circles that contract prices will range \$3.75@ \$4.50, mines.

Cancellations and the low prices quoted have resulted in closing many of the smaller mines in the central Pennsylvania and Fairmont regions. However, the market is flooded with the cheaper grades. The workers thrown idle by the closing down of these mines are seeking work with the larger companies. The coals available for spot buyers consist of many of the better grades, recently thrown on the free market. Large consumers are not actively in the market.

Quotations varied considerably but these will give a general idea of the market: Pool 9, \$3.50@ \$4; Pool 10, \$3.25@ \$3.50; Pool 11, \$2.50@ \$2.75, and Pool 18, \$2@ \$2.50. Quotations for Pool 34 were heard as low as \$2.50.

Demand at Tidewater was largely for the better grades. Quotations for Pools 1, 9 and 71 ranged \$7.75@ \$8.25; Pool 10, \$7@ \$7.25 and Pool 18, \$5.50@ \$6.

#### PHILADELPHIA

*No Lack of Anthracite Demand—Mild Weather Creates Stocks—Company Prices Get Closer Together—Bituminous Market Dull—Prices Near Bottom—Mines Close for Lack of Orders.*

**Anthracite**—The local market keeps on calling for coal, with the deliveries from the shippers moderate. All calls are generally well met by the dealers. Some dealers are already beginning to wonder if they are going to have a dull summer trade, as they figure with a continuation of the present mild condition consumers will have a deal of coal left in their cellars.

The trade has its ear to the ground and is indulging in much conjecture as to when the time will arrive when there will be more than enough coal. To date the independents have shown little signs of breaking, their only troubles being on the steam sizes. Until they begin to shade their family prices it must



be considered that the market is firm. The only inkling of any kind this week was the offering of a very ordinary coal by an independent shipper at the high price to local retailers. This would tend to show that its market on the outside was being slightly curtailed.

Steam sizes are draggy and even the large companies are far from easy on buckwheat. Individual producers are simply going along from day to day on steam coals, with very few future orders on hand, and it is believed some of them are actually compelled to bank some of the smaller sizes at the mines.

Following the lead of the Reading another one of the large companies has added 15c. a ton to stove and nut, making these sizes \$8 and \$8.10 respectively, effective Jan. 1. With this latest increase the prices of the company coals are now more nearly alike than they have been since Government control. Company prices for the month of January per gross ton at mines for line and f.o.b. Port Richmond for Tide average as follows:

	Line	Tide
Broken.....	\$7.75	\$10.45
Egg.....	7.75	10.45
Stove.....	8.05	10.70
Nut.....	8.05	10.70
Pea.....	6.40	8.80
Buckwheat.....	4.25	6.75
Rice.....	3.15	5.60
Boiler.....	2.50	4.90
Barley.....	2.25	4.65
Culm.....	1.50	3.90

**Bituminous**—It would seem that bottom had almost been reached in the market price, as during the last ten days the shadings have been more moderate and many producers have shown a tendency to quit the market rather than go on at lower figures. Recent quotations on Pool 1 coal have been at \$4.50, with Pool 9 at \$4, Pool 10, \$3.25 @ \$3.50 and Pool 11 about \$2.50. There are no quotations on Pool 18. Fairmont gas mine run has been freely offered at \$2.50 and at times somewhat lower. Screened coal of this grade has been offered at \$2.75 and slack at \$2.25.

The feature of the market is the utter lack of demand on the part of the consumer. Even though the consumer realizes that coal is now about as low as it is likely to go, he shows no disposition to buy. Users already have heavy capital tied up in coal stocks and do not want to add to them at any price.

Contract talk has quieted down and it is the belief of both seller and buyer that it is best to await further industrial settlement. Pending this many shippers are advising their customers to fill only immediate wants at market prices. It is believed some of the large users with contracts expiring with the past year have reached an understanding as to price with their shippers.

#### BALTIMORE

*Market Is Extremely Soft Under Business Depression and Good Run of Cars—Export Business Shows Improvement—Hard Coal Conditions Easy.*

**Bituminous**—An extremely soft bituminous market is with the trade here. There are evidences of the effect of business readjustment on every side.

There is a confidence that the worst is about over, it is true, but the present condition is one of light demand and low prices. Both steam and gas coals are selling over a rather wide range under a market of individual application both for consumer and seller.

Sales at Tide at times have been considerably below the mine sale prices, as some shippers have again been caught with coal at terminals for which they could not find a ready sale. A one hundred car supply is reported from most of the mining districts. On the B. & O. a full supply both east and west has been noted for almost a solid week, the first time in many months that such a condition has been recorded. Loadings are less than 3,000 cars daily on that system at this time, but only because the demand is not there.

The export situation shows signs of improvement in some degree, and this has held down the pool accumulation the daily reserve being around 1,700 cars. At this writing there are four ships at the coal piers and seven astream, the greatest show of activity for three weeks. For the first six days of January there was loaded here a total of 17,858 tons of cargo export coal, with 2,683 tons in addition taken in bunkers. The December figures show 219,861 tons export and 20,136 tons bunker, but this was largely loaded the first part of the month.

**Anthracite**—Hard coal conditions are now quite easy. The movement last week to this point was close to 18,000 tons, and was pretty well distributed as to company and other class of coal. The only complaint heard was as to insufficiency of stove size. There is, however, a fair reserve in some of the yards and the situation as a whole is not now bothersome to the trade.

#### BUFFALO

*Bituminous Prices Apparently at Bottom—Car Efficiency at Top—Demand Still Falling—Anthracite Deliveries Gaining.*

**Bituminous**—Everything contributes to bottom prices, so it is expected that they will remain there awhile. It is said, by way of summing up, that there is something like twice the amount of coal above ground now than there usually is at this time of the year. Consumption is away down and still dropping off and the car deliveries are at their best.

What the trade would welcome is less promptness on the part of the railroads in exchange for a good dropping off of special charges. This district has been at work for some time trying to reduce charges on reconsignments, but next to no progress has been made. At the same time the effort is not to be dropped, for a charge of \$7 for reconsigning a car here, after it has reached this point, is regarded as exorbitant.

The shutting down of coal-consuming plants is having its effect, for already there are resumption at lower wages and what seems to be still more significant is that a good many shops

are keeping up wages, but are adding to the time. Some men complain that they are made to work even more than ten hours a day, which gives reason for fearing that this thing may easily be overdone.

Bituminous prices are very unsteady, but are about as follows: \$4 for Youghioheny gas, \$3.50 for all lump, \$3 for mine run and \$2.75 for slack.

**Anthracite**—The shortage is steadily disappearing, though it will be some time before everybody has plenty of coal. Mining is again on the gain and it is agreed that the miners will not make any more serious trouble right away. They worked through the holiday season much better than they did a year ago. Had the slow mining of last fall continued through the winter there would have been disastrous results.

At the same time it behooves anthracite consumers everywhere to keep ahead of the game as far as possible. There are still city bins with only a few bushels of coal in them that put in orders for a winter supply last June.

The easing down of anthracite demand is shown by the reduction of the independent premium, which is down to about \$2, instead of \$6 or \$8, as it was before the general supply began to increase. Many city jobbers refused to handle coal at peak prices, which had much to do with the decline of that branch of the trade.

**Coke**—Demand continues light and promises to remain so awhile yet. So far the calculations for the coming season have not been made. All branches of business are waiting for something to appear that will give an indication as to what may be expected after the holiday suspension is over. This district has a good supply of iron ore to draw upon, but beyond that not much that is definite is in sight. Furnaces are not buying any more coke than they need right away and their contracts are again in position for prompt filling. So many ovens have shut down on account of the dull trade that a slight advance has been made.

#### Northwest

##### MINNEAPOLIS

*Mild Weather Continues, but Domestic Trade Finally Weakens—Seasonable Temperatures Would Soon Develop Shortages—Distribution Has Been Good.*

The abnormal winter continues. There has been an occasional touch of zero temperature but it has not endured long. In general the coal trade is not averse to this, for it is a certainty that a real old-fashioned winter would have driven dealers to a sanitarium. But it now begins to look as though instead of a shortage, there may be a surplus.

It would not take more than a few days of sub-zero weather, with consumption going at top speed, to show how little coal there is in hand through

the Northwest. So long as not much is needed, there is plenty. But when the need begins for much coal, many will be found to be on short rations.

Figures indicate a better distribution to the interior than seemed likely. The ease of transportation movement has been misleading, and made it appear that there has been only a limited tonnage moving off the docks. The total tonnage moved, and the unquestioned saving during the mild fall qual a good total.

Dealers seem to have been convinced that they had to stock coal for the present need at the going prices, despite their hope for lower costs, and have bought reasonable amounts. But it is the inevitable experience that when a severe storm and interrupted transportation prevails, there will be many who are too low on stocks to get through without an emergency relief of coal rushed through. So far this winter there have been no such interruptions, but they seem to occur every winter, when there is any unusual weather to develop such a situation.

Some in the trade rather anticipate a withdrawal from the Northwestern market of Eastern coals, because the producers have found a sufficient market for their production nearer home. The very thing which made the Northwestern market attractive at first has worked to its undoing now. Nowhere else is it feasible to store coal during the summer for use in the winter. But with this summer outlet came a tendency to defer paying for the stocks so stored, until closer to the time when the consumer would pay. And since there has been a better demand from the trade closer home (which pays cash) there is less incentive to send coal to the docks in the summer, when it will not be consumed until winter.

But if this predicted withdrawal should occur, it would leave idle and worthless the many coal docks which have been constructed on the Great Lakes. The investment would probably be worth protecting by retaining the business which has been built up through the past twenty or more years. And it may easily be experienced that future summers will not have so keen a warm-weather trade. It is within the possibilities that even last summer might not have been so active a season, had it not been for the numerous interruptions to production. Such interruptions can hardly occur every summer, or there will be more industrial court legislation which will do away with the strike and the lockout.

#### MILWAUKEE

*Continued Warm Weather Makes Market Dull—Illinois Coal Offered Freely at Reduced Prices—Holders of Eastern Soft Coal Forced To Cut Price Schedule.*

Milwaukee's coal trade is languishing under the adverse influence of spring-like weather and the general pause in industrial activities. City deliveries are at a very low ebb, and orders from

interior points are correspondingly light. A long spell of sub-zero weather is the only thing that could rescue the market from its present condition.

Illinois coal is a drug on the market and is freely offered \$3.50@4.50 at the mines. Naturally, this has undermined the market for Eastern coals and the predicted slump has materialized, a cut of from \$1.50 to \$2 having been put into effect on Jan. 3. Youghiogheny lump now sells \$10.75, pile run, \$10.25 and screenings at \$9; Pittsburgh and Hocking lump, \$10.50, pile run is \$10 and screenings, \$9; West Virginia splint lump is \$11, pile run, \$10.50 and screenings, \$9. Prices of hard coal and coke are not affected. Coke is held at \$17.25, or practically the same as anthracite. Pocahontas is selling \$12.50 @ \$13.

Dock companies are stocked up with high-priced coal and naturally are reluctant to shade prices. The slump, if it continues, will mean a serious loss to them.

### Inland West

#### MIDWEST REVIEW

*Some Industrial Resumption Expected in February—Steam Prices Go No Lower—Domestic Weakens with Mild Weather.*

It was expected by a great many operators and wholesalers that there would be a resumption along industrial lines immediately after the first of the year. This has not proved to be the case, as a number of industries which were planning to get under way have been forced to postpone their plans on account of the unsettled situation. Some are expecting to open up in the early part of February and some definitely state that they do not know when they will resume operations. As a result, the steam market is very weak, although prices have gone no lower than during the past two or three weeks. It is pretty generally felt that prices can go no lower. As it is now, a number of operators ran their mines during December at a loss and this cannot be continued.

There has been considerable change in the market for domestic. On account of the prolonged warm weather, the demand has dwindled so that good lump and egg coals are now no more in demand than steam. Warm weather and the unsatisfactory situation all through the farming areas of this territory are responsible. What little coal is being sold is moved at bargain counter prices, as dealers claim that their trade will only buy the cheapest coals.

The first week of January will probably show a further loss of production from "no market" sources. The percentage of mines closed is growing every day as even those mines with facilities for storing coal are coming to face the fact that they cannot pile up their product indefinitely.

As is usual in market situations like the present, the car supply is very plentiful. Labor conditions are excellent and should there be a demand for coal, the Illinois and Indiana mines would be in a position to produce more coal than they have at any time during the last eight or ten months.

Those who are brave enough to make predictions, venture the opinion that the steam market will be weak and disorganized all during the Spring months. The domestic market on the other hand, is purely a weather proposition and will show great strength as soon as cold weather arrives. It is expected that the long overdue cold spell must arrive soon and make up in intensity for the mild Fall and Winter we have had.

Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):			
Prepared sizes.....	\$3.50@	\$4.25	
Mine run.....	2.75@	3.25	
Screenings.....	2.00@	2.75	
Central Illinois (Springfield District):			
Prepared sizes.....	\$3.25@	\$4.25	
Mine run.....	2.00@	3.00	
Screenings.....	1.50@	2.25	
Northern Illinois:			
Prepared sizes.....	\$3.50@	\$4.00	
Mine run.....	2.50@	3.00	
Screenings (washed).....	2.75@	3.25	
Indiana (Clinton and Linton, Fourth Vein):			
	State	Outside State	
Prepared sizes.....	\$3.45	\$3.75@	\$4.50
Mine run.....	3.20	2.50@	3.00
Screenings.....	3.00	1.50@	2.25
Indiana (Knox County, Fifth Vein):			
	State	Outside State	
Prepared sizes.....	\$3.25	\$3.25@	\$4.50
Mine run.....	3.00	2.00@	3.00
Screenings.....	2.80	1.50@	2.75
Pocahontas and New River:			
Prepared sizes.....	\$5.25@	\$6.00	
Mine run.....	4.00@	4.50	
Hazard and Harlan (Southeastern Kentucky):			
Block.....	\$5.50@	\$6.50	

#### CLEVELAND

*Bituminous Trade Continues Dull—Mine Prices Near Rock Bottom—Retail Pocahontas Lower and More Plentiful—Lake Buyers Appearing.*

**Bituminous**—The coal market in northern Ohio is extremely dull. An apparent over-supply of coal exists as the result of continued production on a large scale despite falling quotations and slackening of demand. Cleveland coal men hold to the belief that prices cannot go down much from present levels. Current quotations, therefore, are regarded as very near rock bottom.

Steam prices at eastern Ohio mines are holding \$2.50@3 for slack and \$3 @ \$3.50 for 3-in. lump. Domestic lump is being sold \$3.75@4. In some instances coal at the mines has been sold below these figures.

Continued mild weather has been a factor in the softening of retail prices on steam lump during the past week. Domestic grades of soft coal generally remain unchanged, however. Local yards are well supplied with stocks.

**Anthracite and Pocahontas**—Shipments of anthracite are still below requirements but enough is coming through to meet the most urgent demands. Receipts of Pocahontas have improved recently and prices in the retail market have dropped. Shoveled lump is down 45c. a ton to \$11.90. Mine run Pocahontas has dropped from



\$11.30 to \$11. Anthracite prices, however, remain steady and unchanged in the retail market.

**Lake**—Buyers of coal for shipment up the Great Lakes next season have begun to appear in the Ohio market. Present low prices have probably attracted interest in Lake coal as inquiries do not usually appear before the middle of February. No contracts, however, have yet been closed as far as has been reported.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg, grate, chestnut and stove, \$15.45  
Pocahontas—Shoveled lump, \$11.90; mine run, \$11.  
Bituminous—West Virginia splint, \$11.75; No. 8  
Pittsburgh, \$9.30; Cannel lump, \$15.75.  
Steam Coal—No. 6 and No. 8 slack, \$8 @ \$9; No. 6  
and No. 8 mine run, \$9; No. 8 1-in. lump, \$8.90.

### CINCINNATI

**Market Is at Standstill—Operations Closing, Awaiting Better Prices and Demand—Retail Prices Are Firm.**

The coal market during the past week was virtually at a standstill. Following close on the holiday lull, it presented no change. In a number of instances dealers say that less than one-third of their average daily amount is being sold at present.

Dealers are beginning to view the situation for the next few weeks with alarm. Firms with equipment for large business report that the demand for steam coal is far below normal, with but little prospect for improvement at least until such time when manufacturers reopen their plants.

Prices of steam at the mines have reached what dealers believe is the lowest possible level. What coal is being received represents contract shipments or demurrage coal which a number of dealers have secured at almost their own prices.

Operators of mines in Kentucky and West Virginia which supply the Cincinnati market, unable to get prices for their coal above the cost of production, have been forced in many instances to close their mines temporarily. This situation has been current among the smaller operators for several weeks and the same condition is now noticeable among the larger producers.

Retail prices as quoted by dealers remain unchanged and are as follows: Bituminous lump, \$9.25@ \$10.50; mine run, \$8.50@ \$9.25; smokeless lump and egg, \$11.25; mine run, \$10@ \$10.50; anthracite egg, \$15@ \$16.25; domestic egg coke, \$14.50@ \$15.

### DETROIT

**Buyers Not Yet Displaying Active Interest—Domestic Trade Again Rather Sluggish—Mine Prices Slightly Lower.**

**Bituminous**—With the holiday period out of the way and some industrial plants resuming more active operation following the inventory period, jobbers and wholesalers feel there is a prospect for a better demand for steam in the near future. So far the improvement has been slow to develop.

A number of industries having reserves, apparently are utilizing them

to meet present needs, though some buyers are taking coal in small consignments, restricting their purchases to quantities sufficient to provide for only a few days in advance. Considerable steam coal coming to the city is being sent on contracts that were arranged early last year.

Interest of domestic users is apparently diminishing with the passing of the colder temperatures. The period of more active demand was scarcely sufficient to make its influence felt in increasing the volume of orders coming to jobbers and wholesalers from the retail trade.

Prices have worked a trifle lower on some sizes. West Virginia or Ohio lump is quoted at the mines a \$4.25@ \$4.50, while nut and slack is \$2.25@ \$2.50, mine run remaining around \$3.25.

**Anthracite**—There is little improvement in the supply. Few retail yards have reserve stocks of any size and shipments are light, irregular and uncertain deliveries adding to the unsatisfactory features of the situation.

### CHICAGO

**Refusals of Shipments Cause Forced Sales—No Industrial Resumption as Yet—Domestic Market Also Quiet.**

The steam market in Chicago is no better than any other place throughout the Middle West, in fact, if anything, it is a little worse. Almost daily large numbers of cars are refused on account of "poor preparation," and other trumped-up charges, thus forcing the operator and wholesaler to sell the coal elsewhere at greatly reduced prices. There has been practically no resumption of the industries. Those manufacturers lucky enough to have orders, are buying only in a hand to mouth way, and perhaps operating their plants from one to three days a week.

The domestic market is in a very weak position. Practically every dealer has his bins full and not only has stopped buying, but has held up shipments on his contracts. There are a great many unemployed in Chicago and when this class goes out to purchase coal they buy in small quantities and as cheaply as possible. As a result, what little market exists today is on the short-rate cheaper coal from the central part of the state and from Indiana. It is expected that cold weather will bring some improvement.

### COLUMBUS

**Mines Closing with Stagnant Market—Domestic Trade Slipping—Production Declines—Cancellations Are Heavy.**

The Ohio coal trade is in a weak condition in every locality, due to the continued high temperatures which have prevailed, coupled with reduced demand for all steam sizes. Cancellation of orders for lump are now the rule and as a result operation at a number of the larger mines of the state has been stopped. Little likelihood of a revival until real winter weather appears is expressed on all sides.

The domestic trade, which has been the strong department of the market, has slumped off to a large extent during the past week. Retail prices are slumping off in sympathy with other grades. Hocking lump is now being delivered \$7.50@ \$8.25 and in some cases even lower. Pomeroy lump is slightly higher. West Virginia splints retail \$8@ \$8.75. Pocahontas, which has been a scarce article, is now arriving in larger quantities. Prices on Pocahontas are still high, however.

Steam trade is at a standstill. With a large number of users closed down there is an oversupply of the small sizes. Railroads are taking some mine run but this is not sufficient to give any strength to the market. Reserves in the hands of large users are generally adequate and consequently buying for the future is reduced. Public service concerns are the best customers at this time.

Production has been lagging considerably under the influence of reduced demand. This is shown by the report of the Southern Ohio Coal Exchange for the week ended Jan. 1 which shows a production of 254,866 tons out of a full time capacity of 518,382 tons. Of the loss, 32,963 tons was due to "no market."

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump.....	\$4.00@ \$4.75
Hocking mine-run.....	2.25@ 2.75
Hocking screenings.....	1.25@ 2.00
Pomeroy lump.....	4.00@ 5.00
Pomeroy mine-run.....	2.50@ 3.00
Pomeroy screenings.....	1.50@ 2.00
West Virginia splints lump.....	4.25@ 5.00
West Virginia mine-run.....	2.50@ 3.25
West Virginia screenings.....	1.50@ 2.25
Pocahontas lump.....	7.50@ 8.00
Pocahontas mine-run.....	4.25@ 5.00
Pocahontas screenings.....	3.25@ 4.00

### ST. LOUIS

**Independent Coal Down to Unbelievable Prices—No Market for Steam or Domestic—Mines Idle Account of No Market—Conditions Serious for Small Producers.**

The St. Louis situation is worse than the most pessimistic coal man ever dreamed it could again become. Screenings are actually selling in the Standard field at \$1 mines, and 2-in. lump is down to \$2, with egg and nut \$1.90@ \$1.95, while 6-in. lump is down to \$3. Many mines are idle because of no market and one company with several operations reports over 500 no-bills on track.

The demand for coal in the country is very small. The present weather is such that in many homes throughout this section but little coal is burned.

Very little coal is moving to Chicago and none to the Northeastern market. A few scattered cars are going north along the river and west to the Omaha territory, with only contract coal going to Kansas City. Conditions in the south are bad on account of the cotton and lumber situation, and the extension of credit is very careful in that territory.

Mines in the Standard field average one to two days a week on commercial

coal as a maximum and some have not worked for a week or ten days. The Mt. Olive field is in somewhat similar condition, except as to price. Operators still maintain their circular. When they cannot sell the coal the mines stay idle. Price does not make the market anyway, for if there is no demand the coal does not move, regardless of prices.

In the Carterville field overproduction has hit some mines slightly in working time, but in a general way all domestic sizes are being moved. Steam drags heavily. Circular prices are maintained on most of the coal, that is from \$4@4.25, with the independents around \$4 and slightly under on screened sizes. Screenings are down to \$2.25 among some of the independents, while the regular circular prices of the larger operators are around \$3, with mine run at about \$3.75. Independents are selling mine run as low as \$2.75.

No labor troubles in any field to speak of, but the situation is becoming a serious one for the miners who are not getting full working time and some not any working time at all.

## South

### BIRMINGHAM

*Domestic Trade Easier but Demand Still Good—Heavy Surplus of Steam Fuel — Production Maintained Near Normal Basis—Labor Slow in Returning to Work.*

The steam coal trade is practically at a standstill, as there is no demand worth mentioning and both sellers and buyers are apparently playing a waiting game. Sales agencies report this as the quietest period that has followed in the aftermath of the holidays in a number of years. Quotations are not being made, as there is no business to quote on, but it is the opinion of coal men that prices will stabilize on the schedules in effect April 1, 1920, when buying is again resumed. These figures were as follows per net ton mines:

	Mine-Run	Prepared
Big Seam.....	\$2.95@3.25	\$3.45
Black Creek.....	3.90@4.00	4.45@4.50
Cahaba.....	3.85@4.00	4.35
Carbon Hill.....	3.35@3.50	
Pratt.....	3.35@3.50	

There is still a good demand for lump and other domestic sizes and spot prices have not receded as yet, as the output from the mines is not sufficient to care for contract business and afford much free coal and prices range \$4@ \$9.50 mines for lump.

Mine workers have been very slow in getting back to work following the holiday season and the output is reflecting this condition. Production as reported to the Coal Operators Association for the week ended Jan. 1 amounted to 240,777 net tons, which is about 60,000 tons under normal figures, but an increase over the week of Dec. 25 of about 25,000 tons. Acts of intimidation and threats upon the part of striking

miners about sum up their activities at present, but labor is little affected by these influences and there is a surplus in every mining section as well as in every other line of industry.

### LOUISVILLE

*Prices Steadied as Rock-Bottom Is Reached—Numerous Mines Close Until Demand Revives—Buying Expected To Improve Shortly.*

Coal has reached such low levels except in the better grades of lump, that producers prefer closing down to operating. If demand was sufficient to take full production at present prices conditions would be fairly satisfactory, but operating only part time on low priced fuel increases the cost of production, and leaves a small margin at best.

At the present time there is but little demand. Gas coals are selling at a slight premium over steam, as some of the gas companies apparently are in the market, while prepared sizes of gas coal are always preferred. Byproduct plants are also taking some coal. Railroad buying is light, and public utilities have not cleaned up the heavy stocks laid in last fall.

Retailers report that about 50 per cent of the delivery equipment is in service, but that yard sales are very low, there being but little hauling. Prices have been reduced on eastern Kentucky and West Virginia coals to \$10 for lump; \$8 for mine run; \$6 for screenings; western Kentucky lump, \$8.50@8.75; mine run, \$7.50; nut, \$8.25; screenings, \$5.50@6.

Quotations show the following mine prices:

	Lump	Mine Run
Harlan.....	\$5.50@6.00	\$3.25@3.50
Hazard.....	5.00@5.50	3.00
West Virginia.....	4.75@5.50	2.50@2.75
Elkhorn.....	5.25@5.50	2.75@3.00
Straight Creek.....	5.50	3.25
Jellico.....	5.00	3.00
West Kentucky.....	3.75@4.00	2.75@3.00

## Southwest

### KANSAS CITY

*Warm Weather Cuts the Demand—Steam Buying Also Sluggish—Mines Operate Part Time—Prices Firm.*

Operating conditions were good in the period ended Jan. 8. Cars were plentiful and there was no labor shortage to speak of.

Mild summer weather is now prevailing throughout the Southwest. Domestic demands have been materially reduced. Steam consumption is also limited by the industrial inactivity. Plants are running on short time or have been closed entirely, resulting in a sluggish steam market.

Despite the inactive market, however, there has been no material change in quotations for spot coals. Many operations are running half-time and forced sales are few, producers refusing to push their output on the market by making further price concessions.

## West

### DENVER

*Lignite Mine Prices Cut—"No Market" Losses Grow—Bituminous Reduction Seen.*

Facing an uncertain market, lignite operators have cut prices 25c. on first grade and 50c. on second grade. Retail prices have been reduced accordingly. Bituminous operators may follow this lead before many days. Steam prices have not yet been cut.

An open winter has demoralized the trade, coming as the climax to uncertainty of market conditions because of the cancellation of top-price contracts entered into last summer. The bituminous market, while not as seriously affected as the lignite, is being stabilized largely by the program of the Colorado Fuel and Iron Co. This concern did not sell coal at top prices demanded by smaller operators, and now that the market has changed and orders are eagerly desired, the higher-price concerns are seeking to take away from the company the legitimate business it has built up in recent months.

Domestic and industrial uses took one-half of the coal mined in Colorado during 1920, railroads about one-fourth, and the following states the remaining one-fourth: Nebraska, 10 per cent; Kansas, 8 per cent; Texas, 5 per cent, and scattering states, 2 per cent.

Production for the week ended Dec. 25, with a holiday keeping down the tonnage, was 183,725 tons.

## Canada

### TORONTO

*Trade Quiet on Account of Mild Weather—Two Weeks' Supplies of Anthracite on Hand—Bituminous Plentiful with Little Demand.*

Dealers report trade quiet for the season owing to the unusually mild weather. Anthracite is being received in fair quantities though the receipts are still below normal and there are now about two weeks supplies on hand. All danger of a coal famine is now considered over unless a strike or other serious interruption of traffic should occur, which is not regarded as likely. There is no change as regards the bituminous situation. The demand continues very limited and probably will continue light for some time in which case, there is an ample supply to last through the winter.

Quotations per short ton are as follows:

Retail:	
Anthracite egg, stove, nut and grate.....	\$16.90
Pea.....	15.40
Bituminous steam.....	12.75
Domestic lump.....	13.25
Cannel.....	20.00
Wholesale f.o.b. cars at destination:	
Three-quarter lump.....	10.00
Slack.....	9.50





B. & O. having a surplus. The generous supply of cars was due to the lack of any need for empties either in other coal fields or for the general transportation of commodities.

Labor conditions were conducive to a larger production than was possible under existing market conditions, there being more miners than usual in the region owing to general dullness elsewhere. The limited tonnage of coal which was loaded was being moved without any unusual delay.

### CENTRAL PENNSYLVANIA

*Operations Curtailed 40 Per Cent with the Low Demand—Prices Sag Further—Cars Are Plentiful—Movement Confined to Contract.*

There is little demand for coal with the exception of some of the large operations with Tidewater contracts. About 40 per cent of the mines in the central Pennsylvania coal field are closed down as a result of the dull market now prevailing, due largely to the depression in other industries.

Prices for the first week of January range from \$3.25 for Pool 11 coal to \$3.75 for Pool 9, while in many instances coal is being sold considerably lower. At DuBois, sales were reported as low as \$2@2.25 a ton. Practically every wagon mine in the DuBois district closed when the price dropped below \$4.

With the market dull and little demand, even at the seaport towns and with the export trade falling off, the railroads serving the mines in the central Pennsylvania coal field have no trouble supplying all the cars necessary to fill requirements.

Notwithstanding the reduction in coal prices at the mines, retail prices are still high in Altoona, the lowest quotation being \$6.50 on the cars at the sidings. Coal is being delivered at \$7.50@10.50, according to the kind, to the home trade.

### EASTERN OHIO

*Production Declines—Car Supply Is Improved—Many Industries Reopening—Better Demand Anticipated—Prices Unchanged.*

Production in the No. 8 field for week ended Jan. 1 was estimated at 320,000 tons, being 20,000 tons under that of the previous week and was about 51 per cent of the potential capacity of 537,000 tons, based on the 5-day week. Car supply was about 85 per cent of requirements, resulting in loss of about 80,000 tons production account of insufficient cars. Labor shortage also resulted in about 15 per cent work-time lost; mine disability and other causes about 10 per cent.

Reports of mines closing down account "no market" show a slight increase, especially among the smaller operations, and demand for both industrial and domestic coal is weak. However, operators generally are optimistic

and it is felt that this sagging market will be of short duration, as many industries in this section have resumed operations on a larger scale beginning with the new year.

Retailers are well supplied and are slow to take deliveries of coal on track for their account. They have not been confronted with an insistent domestic demand for four or five weeks, as the weather has continued moderate.

Receipts of bituminous coal at Cleveland for the week amounted to: industrial, 1,606 cars; domestic, 412 cars, which is a considerable decrease compared with previous weeks, although an improvement over the last week.

Although the market continues dormant, there is little if any recession from prices of last week. Range on spot coal—mine run and slack \$2.50@3, 4-in. lump \$3@3.50, 14-in lump \$3.75@4.25. On orders for larger quantities for future delivery—mine run and slack \$2.75@3.25, lump \$3.50@4.25, domestic lump \$3.50@5, all f.o.b. mines.

## Middle Western

### WESTERN KENTUCKY

*Situation Unimproved—Demand Is Dull—Prices Still Sagging—No Prospect of Immediate Buying Movement.*

Operators are living in hopes that with present light buying stocks will soon be low with industrial concerns, and that a new buying movement will begin. There is no great prospect of such being the case, but it is believed that general commodity buying will shortly open up, resulting in industries, public utilities, railroads, etc., consuming more fuel.

Prices in western Kentucky show very little change as a whole. This week coal is quoted \$3.75@4 for prepared sizes; \$2.75@3 for mine run; \$2.25@2.50 for nut and slack and \$2@2.25 for screenings. Last week's averages show prepared, \$4.55 (range \$3.75@5); mine run, \$3.20 (range, \$2.85@4); screenings, \$2.45; (range, \$2.25@3).

Some of the operators are afraid that there is another period ahead of them similar to that existing just after the armistice when there was light demand and poor business for several months, followed by very fair business after things opened up in April of 1919.

### INDIANA

*Spot Coal Freely Offered—Some Stocking Activity Is Observed—Domestic Sizes Are Softer with Mild Weather.*

Some idea of what has happened in the bituminous market may be gathered from the announcement that one of the mines in the Indiana district has closed down because of lack of orders. The car supply as it affects the coal trade is excellent, largely because the demand

for open top cars from other industries is not heavy.

One of the main causes for the present market condition here is the remarkably open winter. Up to the present time the temperature has been several degrees above normal and just once, and that only for eighteen hours, did the state have real winter weather.

Some demand has been seen from public utilities and some of the industries, which despite the fact that there appears to be somewhat of a business depression, are laying up stocks of reserves against another situation such as prevailed last fall. This demand, however, is noticeably falling off because of the fact that these industries have about got their supplies in.

Jobbers report there is more free coal on the market and at much more reasonable prices than formerly and retailers have plenty of coal in their yards. In spite of real cold weather last week Kentucky lump is being sold at \$1.50 below the selling price of the week previous. On Pocahontas and West Virginia coals the market is extremely soft and some reductions are expected. There is no indication that prices will slump to the pre-war level, which was much lower in all grades than coal is now bringing.

## Middle Appalachian

### HIGH-VOLATILE FIELDS

*All Production Greatly Curtailed—Mines Closing with Low Prices—Shipments Confined to Contracts—Cars Too Plentiful—Little New Business Taken.*

#### LOGAN AND THACKER

Mines were marking time to a great extent in the Logan field between Dec. 27 and Jan. 3 and until there was a better market, especially in view of the low level of prices. Mine run was not averaging, insofar as there were any quotations, more than \$2.50@2.75. Not only were prices too low to market the output at a profit, but furthermore there was no demand in the open market. As it would have meant giving coal away to sell at the above figures, operators preferred to keep their mines in idleness.

The bulk of contract coal was being consigned to gas companies and public utilities. Steel companies, as a general rule, were not taking much on their contracts. With operations so greatly limited as a result of market conditions, production was far below normal, in fact not over 30 or 40 per cent. There were more cars in the field than could possibly be used, hundreds of empties being left over from day to day. It was estimated on Jan. 3 that there were not less than 4,000 empties in the Logan region.

In the Williamson field the drop in demand and prices was making itself felt to some extent during the last days of 1920 and the first few days of 1921,



although three more mines, which had originally been affected by the strike, were again in operation. Mines had not been so seriously affected in the Thacker field by developments in the market. At a time when the market situation was growing less encouraging they were struggling under the effects of the strike.

If the output was not up to normal it was not so much because of the strike but largely because of inability to dispose of a larger tonnage, there being virtually no spot market. Contract requirements were all that kept the mines going, many operations still being far behind on such contracts.

#### KANAWHA

Inability to market more coal was responsible for a general curtailment of operations in the period ended Jan. 1. The few spot orders placed were for gas coal and fuel for public utilities. There remained only contract orders to be filled.

It was useless to try to produce a large tonnage, as it would simply have accumulated on sidings for want of buyers. Indeed, there were many unconsigned loads on the Coal River branch of the C. & O. and elsewhere. Mines were flooded with cars throughout the week. Upon few previous occasions have there been more empties furnished at any one time and seldom has there been less need for cars.

The market was showing no signs of recovery, as disclosed by a price of \$2.75 on steam. That at least was the price being offered by buyers, but they found few takers. Gas fuel was bringing a better price—about \$4. Gas companies and public utilities were sticking to their contracts better than other classes of buyers.

#### VIRGINIA

General market conditions cut down production to about 70 per cent of normal capacity, although some of the larger plants were able to continue shipments on their contracts to the full extent of capacity. As not all of the miners had returned to work during the last week of the year there was some loss of production at the larger mines chargeable to a labor shortage. There was no shortage of cars during the week, empties being left over in many instances. The output for the week was in the neighborhood of 100,000 tons. Twenty thousand tons had been lopped off production because of the inability of some mines to dispose of their potential output.

#### NORTHEASTERN KENTUCKY

Production was far below normal in the last weekly period of the year. In fact, it reached a more pronounced minimum than has been recorded in some time, due to extremely poor demand and low prices. As a matter of fact there was little more than an occasional order, mines being restricted largely to contract shipments. The larger companies were not affected by

market conditions to such an extent as the smaller producers, but from 40 to 50 of these smaller mines were down. It did not require a capacity output to take care of contract business, hence operations were far from regular even at some of the larger plants. Nut and slack were not averaging more than \$2@2.25, with mine run \$3@3.50, and prepared sizes ranging \$4@4.50.

Car supply was more than satisfactory. There was really an overplacement every day in the week. With a heavy run of empties, only a small proportion were loaded.

#### LOW-VOLATILE FIELDS

*Good Production and Market Conditions Prevail in Pocahontas and Tug River Sections—Operators Take More Optimistic View—Return to Normal Seen with New Coal Year.*

#### NEW RIVER AND THE GULF

There was a plentiful supply of empties both on the Virginian and the C. & O. in the Winding Gulf region for the week ended Jan. 1. Operators were unable to take advantage of the supply, there being probably less need for cars than at any other time in the year.

Many of the miners did not return before the first of the year, knowing that their services were not particularly in demand. That, together with the falling demand materially curtailed production. The intention was announced by some companies of not resuming operations until Jan. 10 and even not then unless there should be a material improvement in market conditions.

Contract business constituted the only source of activity in the New River region in the last week of the old year, spot business having practically vanished. Mines not having contract orders to fill made no effort to operate during the weekly period, and even where producers held contracts they were not shipping full tonnage thereon. There was no immediate prospect of additional business but producers were optimistic of the future despite prevailing conditions.

Nearly every mine in the field was overrun with empties, only a small proportion of which it was possible to use. That was especially true on Monday, not much more than 8,000 tons being produced on that day.

From a market standpoint there was nothing to cause a large production. What little coal was being sold on the open market had a range of \$4@5. The greater part of the output was being shipped to Eastern points, as the Western demand was largely at a standstill.

#### POCAHONTAS AND TUG RIVER

Production conditions in the Pocahontas field the last week of the year were apparently encouraging, as the principal shippers were working on a larger scale than during the corresponding week of 1919. The United States Coal & Coke Co. was short of

coal, and producing heavily, and other companies worked Monday, although it had been the general expectation to extend the holiday until Tuesday. No difficulty was being experienced, apparently, by regular producers in moving all coal.

Inquiries for slack around \$4 for steel companies were more brisk. Retailers were taking coal, anticipating cold weather. Prices were generally firm, mine run was fluctuating \$4.50@5 and contract holders were taking shipments a little more freely. Everybody, however, was somewhat apprehensive about the future but expecting a return of normal business by April.

Loadings in the Tug River field reached a total of 68,350 net tons, equivalent to about two-thirds of maximum production. Car supply was adequate for all needs, but a number of operations had their deliveries of cars held up pending disposition of set-out loads. That movement on the part of the railroads proved to be effective, railways reporting that they had cut in half the number of unconsigned loads during the past week.

Tug River coal, it was claimed by the producers, was being easily absorbed up to the point of the present output and nearly all operations were running on a full-time basis. Labor was more plentiful than for several years, there being a large influx from mines recently shut down in the fields served by the C. & O.

### Southern Appalachian

#### SOUTHEASTERN KENTUCKY

*Many Operations Still Closed—Market No Inducement for Reopening—Contract Shipments Heavy—Labor Is Plentiful—Over-Scale Wages Reduced.*

Operations in this field have been greatly curtailed over the holiday season. Many mines which closed Dec. 24 are still in idleness, due to the extremely sluggish market. All demands are quiet and the little tonnage mined is moved with great difficulty.

Quotations range around \$5 for block, \$3@3.50 for mine run. Mines which have orders are receiving 100 per cent car supply. Shipments on contract are heavy and those operations which are not fortified with sales agreements are hard put to it to market their output.

All high wages above the standard scale, which had been paid in this field for some time as an inducement for the men to work more efficiently have been reduced in an effort to cut the cost of production. Labor is plentiful, in fact with the present low rate of production it is doubtful if, for a time, the field can furnish a living to all the workers available.

The Southern Appalachian Coal Operators' Association estimates the tonnage produced for the year 1920 to be around six and one-half million tons.



# MINE And COMPANY NEWS



## ILLINOIS

The Tushorn Coal Co. and the Jefferson Coal Mining Co., both of Springfield, have filed notices of dissolution in the office of Secretary of State L. L. Emmerson.

The Groveland Coal Co., Peoria, through Dan R. Sebastian, president, and Walter Off, secretary, has certified to the Illinois Secretary of State for an increase in capital stock from \$400,000 to \$1,000,000. The \$600,000 increase is a surplus which is to be divided among the stockholders pro rata according to their holdings as a stock dividend.

The Illinois Central R.R. has appropriated the sum of \$10,000 to be used in the erection of a new depot at the town of Dowell, in Jackson, at which place is located the Kathleen mine of the Union Colliery Co. of St. Louis. The town has been built up entirely within the last three years and the mine around which the town is built, is rapidly becoming one of the largest producers in Perry county.

A price of \$50 per acre for the coal under the 120 acre county farm of Macoupin County, has been offered the Standard Oil Co., by the supervisors of the county. The plan was to leave the coal under the buildings standing on the farm. The operating company has not yet made public its intentions of the offer.

Hundreds of men are flocking to the Southern Illinois coal fields from the industrial centers where the plants have closed down. One mine has had seventy-five applications from men and boys but was unable to use any of them, and operators say there are more applicants now than at any time in years. Several miners from the West Virginia coal fields, where the union men are locked out, have recently found work near Benton, one mine employing eighteen of them. It is expected that the influx of strangers to the coal fields will continue to increase. Most of these people coming in have no experience in mines, coming here only in the hope of work, as the plants which have heretofore employed are closed down wholly or in part.

The Binzel Coal Co., Farmington, has been incorporated with a capital of \$300,000, to operate coal properties in this section. The incorporators are Louis P. Haller, Otto C. Bruhlman and F. E. Matthews.

## INDIANA

Dwight S. Curwick, Frank A. Throop and Lester A. Brown, all of Indianapolis, recently incorporated what is known as the Western Coal Corporation of Indianapolis, with a capital stock of \$25,000. The company was organized to buy up mines and mineral lands.

The Culbertson Construction Co. of Ohio, recently applied for admission to Indiana. The company is engaged in stripping and shipping coal and states in the petition for entry that \$25,000 of its capital stock is represented in Indiana.

The Tidewater & Western Coal Co. has handled a big deal in taking over 2,000 acres of coal land in Pike County, east of Spurrier, in Monroe Township, seven miles from the Big Four R.R. An average of \$125 an acre was paid for the land. Grading has started on a seven-mile survey to connect with the Big Four near Somerville. It is proposed to use stripping process as well as shaft systems. B. W. Lewis, of Wheeling, W. Va.; R. D. Lloyd, Steubenville, O.; Loris Julian, Evansville; and H. W. Eakin, Petersburg, Ind., are interested in the organization.

The first coal mine in the Clinton field to close because of the slackened demand for coal will be the No. 3 mine of the W. S. Bogle Co., incorporated. The mine was opened a year ago and employs 100 men.

## KENTUCKY

The Virginia Mining Co., Allen, is planning for the erection of a new coal tippie at its local properties. The company recently increased its capital for general expansion.

Col. Samuel Wilson, Lexington, appearing for the Kentucky Union Coal Co., protested before the State Tax Commission against an assessment of \$20 an acre on 7,000 acres of coal in Perry County, the land being several miles from a railroad, and not ready for development for some time to come.

Reports from Pike County, in the Hazard District, are to the effect that extensive road improvements will be made in the coal fields districts this season. Hundreds of miles of road improvement are expected in the Big Sandy district this year.

A new company of Louisville and Cincinnati business men are forming a half million dollar company, headed by E. T. Durrett and E. T. Hutchins, Louisville, to construct barges and start a barge line between Cincinnati and Louisville, which should further develop river transportation.

The Clabron-Elkhorn Coal Co., Paintsville, is planning for the construction of a new coal tippie at its properties near McDowell. A housing development for miners is also planned.

The Parks-Richmond Coal Co., Wheelwright, Ky., recently organized, is planning for the construction of a tippie at its local properties. A housing development will also be established for operatives at the mines.

## MARYLAND

The Cumberland Smokeless Coal Co., Cumberland, Md., has been organized with a capital of \$100,000 to operate on a large tract of property in Somerset County, on the main line of the Western Maryland Railroad. The company has a total of about 500 acres of land in this section. L. Lee Lichenstein is president and D. F. Mullen, secretary and treasurer.

## OHIO

The Hocking Valley Mining Co., recently organized, which took over the abandoned mine of the Lorain Coal & Dock Co., at Hocking Station, five miles north of Athens, has completely re-equipped the mine and is loading coal in a small way. The property consists of 2,300 acres of good coal and was abandoned about 1919. The equipment is modern and a capacity of 3,000 tons daily is expected by April 1. O. E. Harrison is president. The product will be sold through the Essex Coal Co. of Columbus.

The Continental Clay Co., recently chartered at Canton, with a capital of \$2,000,000, has taken over the yard of the Ferris Steam Mortar Works, Columbus, and will soon install coal-handling machinery to open a retail business. D. M. Swisher is general manager of the yard.

Papers have been filed increasing the authorized capital of the Ohio Consolidated Coal Co., from \$50,000 to \$250,000.

The Eagle Red Ash Coal Co. has been chartered with a capital of \$200,000 to mine and sell coal in West Virginia. Incorporators are J. E. Sater, M. L. Sater, W. A. Lyons, A. Timberman and F. Scott, all of Columbus, Ohio.

## OKLAHOMA

The Cavanal Coal Co., Kansas City, recently organized with a capital of \$500,000, is planning for the development of extensive coal properties at Shady Point, Okla. Mining machinery and equipment will be installed at an early date, and a modern coal tippie constructed. The installation is estimated to cost about \$100,000.

## PENNSYLVANIA

The Reed Coal & Coke Co., Pittsburgh, is being organized by R. P. Reed and R. S. McMahon to operate mining properties in the Pennsylvania fields. Application for a state charter will be made on Jan. 17. Joseph J. Goldsmith, 921 Frick Building, represents the company.

What is considered to be the last large coal field in Greene County in the line of easy development to be sold has just been acquired by the Perry Land company, reputed to be a subsidiary of the Piedmont Coal Co., purchaser of the J. V. Thompson estate. The tract consisting of 1,953 acres was sold for \$250 per acre by Uniontown investors.

The Northwestern Mining & Exchange Co., Granville, is establishing a new mining town in the vicinity of DuBois, to be known as Cramer. Construction is under way on a new railroad line, expected to be completed at an early date. Immediately following, considerable machinery and equipment will be installed. Twin shafts will be constructed and provided with all modern features, including two large hoppers, each with capacity of 6 tons, for bringing the coal to the surface, instead of with the use of mine cars. A large coal tippie will be built. Superintendent Robertson is in charge.

Miners in the section of Coaldale have launched a new daily paper to be known as the "Panther Creek News." Thomas Kennedy, president of the United Mine Workers of the Hazleton district, is head of the enterprise and John Guyer is editor.

The Harco Coal Co. of Johnstown, a subsidiary of Cosgrove & Co., declared a dividend on Jan. 1, of 7 per cent and also a substantial dividend on the common stock of the company. The Harco company was organized in March, 1920, taking over the property of the Sunnyside Coal Co., and the Ideal Coal Co., the mines being known as Thermal Nos. 5 and 6 of the Cosgrove chain. H. J. Meehan is president of the company and the stockholders are mostly residents of Johnstown.

Members of the engineering corps of the Delaware, Lackawanna & Western R.R. Co. and Scranton city firemen have succeeded in determining the location of the mine fire raging in the old workings of the above-named company, and for twenty-four hours played streams of water on the blaze. The fire, according to members of the engineering corps, is in what is known as the New County vein and is about 400 feet below the surface. The New County vein has a thickness of about eight feet, and is a mass of burning coal, according to reports of the surveying corps. The first mining in the workings which are now on fire was completed some time ago and no operations have been carried on there for several years.

## TEXAS

The Texas Fuel Co., Dallas, recently formed with a capital of \$2,000,000, is planning for the development of extensive lignite coal properties in Limestone County. The company has a tract of land totaling about 1,500 acres, a portion of which will be worked at the present time. E. B. Neiswanger is president, and S. J. Jacobs, treasurer.

## WEST VIRGINIA

The Crown Coal Co., Sand Run, recently formed with a capital of \$100,000, is arranging for the development of extensive coal properties in this section. The company has a tract totaling about 150 acres, and plans for the installation of machinery to provide a capacity of about 400 tons of coal per day. A. J. Chisolm is president and manager.

The Loco By-Product Co. was organized late in December with a capitalization of \$100,000 and has entered upon the development of 828 acres on Gauley River at Swiss, Nicholas County, W. Va. However, it will



require a period of six months before the new plant will be ready for the production and shipment of coal. Newly elected officers of the company are: Dr. O. O. Older, president; J. O. Lloyd, vice-president and general manager; A. C. Orcutt, treasurer; M. M. Moorehead, secretary.

Construction work is progressing on a number of houses which are being erected for the use of miners by the **Pine Bluff Coal Company** on the Wyatt-Bingamon branch of the Western Maryland in the Marion county field.

Provision will be made by the **Western Maryland R.R.** for handling at least 100 more cars than is now possible at the Chiefton yards of the company through which loads and empties from and for the Helens Run and Wyatt-Bingamon branches of the road in the Marion County field pass. This will be accomplished by adding two tracks to the present trackage of the yard and it will make it possible to accommodate about 350 cars in all. Plans have progressed to the point where directors have authorized this improvement and had made an appropriation in the 1921 budget for the expense of this improvement.

Officers of the company, for the present, however, will be in Pittsburgh, Pa. Closely identified with the new company are: Dellet Stemple, Gordon B. Ramsey, John Hewitt, E. W. S. Kennedy and Waitman D. Corder, all of Philippi, W. Va.

Lee J. Sandbridge, a successful operator of Barbour County, and associates have organized a million dollar company to develop coal property near Meriden in Barbour County, the new concern having been chartered as the **Meriden Smokeless Coal Co.** Offices and operation, as indicated will be at Meriden. Associated with Mr. Sandbridge in this project are: M. A. Os-good, Philippi; S. M. Kaemmerling, Gustav Kaemmerling and Rose L. Meaner, all of Philadelphia.

The **Diamond Coal Co.**, Fairmont, with headquarters in this city, has retired all its preferred stock, such stock being retired at a price of \$105, although the par value was \$100. There were 250 shares outstanding.

In order to make provision for a larger force so as to increase its output, the **Forest Coal Co.**, Morgantown, is engaged in putting up about 20 new houses for miners at its plant at Cassville on Scott's Run in the Monongalia County field.

The Betty mine of the **Hudson Coal Co.**, Morgantown, located on the Wyatt-Bingamon branch of the Western Maryland Ry. in the Marion County field has been purchased by the **Stone & Scott Coal Co.**, owned jointly by E. B. Stone and T. M. Scott of Morgantown.

In connection with the recent purchase of coal land in Monongalia County, the **Connellsville By-Product Coal Co.**, has started work on three openings on its 4,000 acre tract in the Pittsburgh vein, located near Barker, Monongalia County. The company is sinking one shaft and arranging for two slope openings. Production will not be started, however, much before March 1, 1921.

Development of coal territory in the Harrison County field will be undertaken on a rather extensive scale by the **Macfarlane Coal Co.**, which has been organized with a capital stock of \$50,000, general offices of the company to be in Clarksburg. Largely interested in the new enterprise are: George C. Macfarlane, Percy Byrd, John P. Keeley, J. H. Callahan and Benjamin R. Britt of Clarksburg, W. Va.

Purchase of 140 acres of coal land in the Sewickley vein from the **Knob Coal Co.**, in Monongalia County, in addition to acreage already held by the **American Gas Coal Co.**, will give the latter company about 440 acres in all. The **American Gas Coal Co.** not only secured the holdings of the Knob company but also the tipples, sidings, houses and entire plant. The 300 acres held by the **American Gas Coal Co.** are in the Pittsburgh vein. With the mining properties of the two companies combined, it will give the purchaser an output of about 40 cars of coal a day. The acreage which changed hands is on the Monongahela River about 12 miles south of Morgantown at Flagg Meadows station.

The **Hoffa-Martin Coal Co.**, Piedmont, will operate on a very extensive scale in Mineral County in the Upper Potomac field. This company was organized with a capital stock of \$150,000. It is understood development work will be initiated at an early date. Principal stockholders of the new company are: Charles W. Hoffa and Margaret Hoffa of Lonaconing, Md.; John Martin, Lillie G. Martin and James Martin of Piedmont, W. Va.

Capitalized at \$100,000 the **Hutton Coal Co.**, Clarksburg, plans the development of coal lands in Harrison County though the principal office of the company will be at Fairmont, W. Va. Actively connected with the new company are: Ernest Hutton, Isman E. Swartz, A. J. Colborn, Pearle Morris, Adda Morris of Fairmont.

Operations of the **Verona Coal Co.**, Wellsburg, will be in Cross Creek District of Brooke County, general offices of the concern to be in this city. The capitalization of the new corporation has been fixed at \$50,000. Preparations are under way, for the beginning of development work at a reasonably early date. Active in organizing this company were E. E. Carter, G. R. Waddell, Jeannie Waddell, Robert Shepherd and A. M. Shepherd, all of Weilsburg, W. Va.

Unless present plans miscarry the **Gloria Coal Co.** of Huntington, will be in a position in the near future to make its first shipments from its new plant on the Marsh fork of Coal River, now nearing completion and also from its new operation on the Right Fort of Beaver creek in Kentucky. Richard Williams is the president of the company.

A new mine has been opened by the **Kanawha Consolidated Coal Co.**, Charleston, at Peytona on Coal River and coal will be produced from the No. 2 Gas seam. This concern was organized only a few months ago, John O. Hare being its president.

The two largest resident coal corporations organized during December, 1920, were the **Brady Coal Corporation** of Fairmont, and the **Aetna-Sewell Corporation** of Keeney's Creek, W. Va., each having a capitalization of \$2,000,000.

There were organized during the month the following companies, the post office and capitalization being given for each company.

Company	Capital
Forman Pocahontas Coal Company.....	War \$50,000
The New Republic Coal Company.....	Charleston 60,000
Coalsburg Domestic Coal Company.....	Welch 25,000
North Weirton Coal Co.....	North Weirton 50,000
Great Lakes Coal & Coke Corporation.....	Charleston 250,000
Moore-Humphries Coal Company.....	Levi 10,000
Coal River Fuel Co.....	Charleston 75,000
The Shaw Coal Co.....	Parsons 50,000
Glasscock Collieries Co.....	Morgantown 200,000
The Sage Coal Co.....	Buckhannon 20,000
Lillybranch Coal Co.....	Big Creek 50,000
The Clay Gas Coal Co.....	Philippi 60,000
Kendrick Coal Co.....	Madison 50,000
Union Fuel Co.....	Charleston 50,000
Shinnston Fuel Co.....	Shinnston 50,000
Laurel Creek Fuel Co.....	Charleston 250,000
Two-Seam Coal Co.....	Winding Gulf 25,000
Vernon Coal Company.....	Naugatuck 20,000
Coal Mountain Mining Company.....	Huntington 250,000
Tidewater and Domestic Coal Company.....	Charleston 25,000
Strickler Pocahontas Coal Company.....	Sandy Huff 100,000
Sand Hill Coal Company.....	Fairmont 50,000
Brady Coal Corporation.....	Fairmont 2,000,000
Woods Run Coal Co.....	Fairmont 50,000
Middle Fork Block Coal Company.....	Charleston 150,000
Dale Coal Company.....	Clarksburg 150,000
Ridgeline Coal Mining Company.....	Clarksburg 100,000
Standard Gas Coal Co.....	Charleston 150,000
Wood-Morton Fuel Co.....	Charleston 100,000
Lewis County Collieries Company.....	Clarksburg 25,000
Reed Run Coal Co.....	Masontown 50,000
The Robinson Coal & Coke Company.....	Sutton 2,000,000
Aetna-Sewell Coal Co.....	Keeney's Creek 2,000,000
The Crown Coal Co.....	Sand Run 100,000
Guyana Coal Company.....	Charleston 25,000
Gauley By-Products Co.....	Vaughn 100,000
Carman-Litten Coal Co.....	Wellsburg 32,000
Glennova Coal Co.....	Wheeling 50,000
Lock Six Coal Co.....	Charleston 10,000
Wilsondale Coal Co.....	Huntington 10,000

In addition to the resident companies organized during the month, the following non-resident companies were also organized:

Castile Coal Co.....	Morgantown 60,000
Lawrence Coal Co.....	Pittsburgh 10,000
Elkhorn Gas Coal Co.....	Bluefield 100,000
The Ira Coal Co.....	Williamson 40,000
McKeefrey Coal Co.....	Pittsburgh 300,000

The following companies increased their capital stock in the amounts named during the month:

West Williamson Coal Co., from \$10,000 to \$50,000; Follansbee Gas Coal Co., from \$175,000 to \$250,000; Weston Fuel Co.,

from \$25,000 to \$100,000; East Gulf Coal Co., from \$800,000 to \$1,250,000; Marteny Coal Co., from \$25,000 to \$100,000; Sequoi Coal Co., from \$50,000 to \$150,000; Greenbrier Smokeless Coal Co., from \$100,000 to \$200,000; Wood-Peck Coal Co., from \$35,000 to \$200,000; Nelson Fuel Company, from \$50,000 to \$500,000; Raleigh Smokeless Fuel Co., from \$300,000 to \$500,000; Sewell Valley Coal Co., from \$200,000 to \$300,000; Waddell Coal Company, from \$200,000 to \$250,000; Pointlick Coal Co., from \$100,000 to \$150,000; The Tabors Creek Coal Co., from \$25,000 to \$100,000; Summit Coal Co., from \$100,000 to \$250,000.

Marion County coal land will be developed by the **Southern Coal Corporation**, which has just been organized with a capitalization of \$50,000. Officers of the new concern will be maintained at Fairmont. Actively connected with the new company are: Edna Anderson, Hal O. Dille, O. P. McKinney, J. Edwin Gushill and Frank C. Haymond of Fairmont, W. Va.

Virgin coal territory will be developed by Morgantown capitalists near Mannington in the Marion field, the sum of \$337,500 having been paid for 1,500 acres purchased from the **Flat Run Gas and Coal Co.** It will be necessary for the purchasers to sink a deep shaft as the coal is between 500 and 600 feet below the surface. The large tract purchased is only about a mile west of Mannington. Coal is in the Pittsburgh seam. Among those interested in the concern which purchased the land are: B. M. Chaplin, R. E. Kerr, E. F. Bowlby, M. L. O'Neal, P. M. Beaumont, C. F. Boehler, A. Kammerer and N. C. Burdette of Morgantown; E. S. Dunn of Pittsburgh, Pa.

Boone County coal lands will be developed by the **Haman Coal Co.**, which will operate on a large scale in the county named as the company's capitalization of \$400,000 will indicate. Leading figures in connection with the organization of the new concern are: H. T. Lambert, Jack T. Craig, J. W. Van Valkenburgh of Huntington; James E. Hughes of Charlestown; A. C. Schafer of Cofoco, W. Va.

Development of quite an extensive acreage in Harrison County will follow the organization of the **D. K. R. Coal Co.**, capitalized at \$40,000, the general office of the company to be at Clarksburg. Largely interested in the new concern are: Chester O. Davison, V. J. Roy, Fannie Hart, W. D. Williamson, of Clarksburg; A. O. Kelley, of Wallace, W. Va.

Purchase of 150 acres of coal land on Scott's Run in Grant District of Monongalia County at an expenditure of \$34,500 by a David C. Reay of Morgantown is thought to presage the development of the territory purchased by a company now being organized.

The **Guyana Collieries Corporation**, Logan, in which W. P. Tams, Jr., and others are interested has just consummated negotiations for the purchase of 2,100 acres of land from the **Gilbert Creek Land Co.**, the Canebrake Land Co. and C. W. Campbell for the sum of \$91,307. The same purchasing company in addition to the land just acquired has also expended \$160,000 for coal territory on Gilbert Creek and the Guyandotte River and will operate on a very extensive scale in the Guyana region.

While the **Morgantown Coal Co.** will retain its general office at Morgantown, it is also branching out and has opened a branch office in Philadelphia of which Joseph A. Bayle, sales manager of the company will have charge, the Philadelphia offices being in the Pennsylvania Building.

J. J. Reynolds, until recently connected with the **Soper-Mitchell Coal Co.**, has acquired title to 125 acres in Cass district of Monongalia County in the busy Robinson Run district and it is believed that he plans the early development of the territory so acquired.

Organization of the **Fraser Mining Co.** with a capitalization of \$50,000 presages the development of additional coal territory in Kanawha district of Fayette County. Chiefly interested in the new concern are: C. V. Fraser, H. M. Morgan, F. M. Butts, E. M. Hoback and C. A. Fraser, all of Charleston.

## CANADA

R. A. Ross, chairman of the Canadian Advisory Council of Scientific and Industrial Research, who has for the past two years been investigating the possibilities of utilizing the large lignite coal deposits of Saskatchewan, states that the briquetting plant now being established at Estevan, Sask., will be in operation by April next. The buildings are almost complete and most of the machinery is on the ground. It will have an output of 30,000 tons of briquettes per year.

## Industrial News

**Johnstown, Pa.**—Cosgrove & Co., operators of twelve mines in Pennsylvania and three in Illinois, remembered their employees at Christmas time and announced a bonus for every worker in the offices at New York, Chicago, St. Louis, Minneapolis, Baltimore and Norfolk.

**San Francisco, Cal.**—The Western Fuel Co. announces the removal of its offices to the Balfour Building.

**Akron, O.**—The B. F. Goodrich Rubber Co. recently celebrated their golden anniversary, the company having been incorporated by Dr. Franklin Goodrich on Dec. 31, 1870.

## Association Activities

### West Kentucky Coal Operators Association

At a meeting in Louisville in December the association reported numerous cancellations on orders, which in some cases had left books almost empty of business. It was reported that car shortage was no longer a serious matter, the principal trouble now being in getting business. Operators while a bit dispirited, were optimistic, feeling that cold weather will force a demand for domestic sizes, and steam demand will come back shortly, but probably not strong until present stocks are lowered.

## Traffic News

In an interlocutory order recently, the Public Service Commission of Indiana authorized the Indiana Power Co., Edwardsport, to increase temporarily its commercial power rates and its power rates to mines until the commission has time to go into the company's petition. The final hearing on other increases requested will be held Jan. 24. The company supplies electric power to many mines and industries in a big field, of which it is the center.

The Senate recently passed a resolution introduced by Senator Nelson, of Minn., directing the Interstate Commerce Commission to ascertain and report the cost of railroad fuel for the current year as compared with 1919, and to furnish a statement of the tonnage of railroad fuel for 1920, its total cost, its average cost per ton and the average cost per ton of 1919 railroad fuel "so that the difference in cost between the two years may plainly appear."

Senator Poindexter, of Washington, has introduced a bill similar to that introduced in the House by Rep. Johnson, providing for 20-year leases of school lands in Washington State containing coal, oil, oil shale or gas.

The Interstate Commerce Commission has decided that the proposed cancellation of joint rates on bituminous coal from mines on the Kanawha and Michigan Rys. in West Virginia to Eastern and South-eastern points is not justified.

The Interstate Commerce Commission has approved a loan of \$60,550 to the Huntington and Broad Top Mountain R.R. and Coal Co. of Pennsylvania for the construction of a bridge on its main line at or near Saxton, Pa.

The Senate and House have passed a bill which now goes to the President, reserving public lands for a water supply for Sunny-side, Utah, but authorizing the lease or other disposition of coal or other minerals in the land if they can be mined without injury to the water supply.

The Mayor, Aldermen and Common Council of Brockton, Mass., have petitioned Congress to enact legislation regarding the fixing of prices on coal.

The Indiana public service commission has denied a petition of employees of the McClellan mine at Riley, Ind., for a miners' train between that place and Terre Haute. The commission in its finding held that the railroad company was not provided

with sufficient extra equipment to place the train in service and that the cost of operating a train, the distance of nine miles for 100 men would be excessive and prohibitive.

The Federal Supreme Court has upheld the maximum freight rates of North Dakota, reversing its own decision, in the suit of the Soo Line against the Washburn Lignite Coal Co. The road sued the coal company to recover \$28,000 freight charges in excess of the rate allowed under the state law, and the court holds in favor of the coal company.

In urging readjustment of division rates to provide larger revenues, representatives of New England railroads before the Interstate Commerce Commission said the large deficits suffered by these roads the past year were partly due to higher coal costs. D. S. Brigham of the Boston and Maine R.R. said the average cost of coal during the first eight months of 1920 was \$7.19 as compared with \$6.28 a ton for the same period of 1919.

The Interstate Commerce Commission in a letter to W. N. King, Assistant General Attorney of the New York Central Lines, has defined "district" as used in its orders affecting car supply for coal as meaning "a mining district within which the mines are grouped under common rates and within which the mines are rated for car supply with relation to each other."

## Personals

Frank C. Dunbar of Kentucky, has been appointed general superintendent of the Hillman Coal & Coke Co., of Pittsburgh, Pa., to succeed Harrison T. Booker, whose resignation was announced some weeks ago. M. D. Cooper of Brownsville, Pa., district superintendent of the company has been promoted to the position of assistant general superintendent with headquarters also in Pittsburgh.

B. L. Johnson has been appointed chief of the section of foreign mineral reserves of the Geological Survey, succeeding Eugene Stebinger. Mr. Stebinger has for some months been engaged in private foreign work, and is now completing the test of the report on the coal resources of Europe.

George F. Harley, engineer of the Geological Survey, who was appointed during the war to make power investigations in connection with the conservation of fuel, has resigned.

The Chicago Pneumatic Tool Co. announces the appointment, of R. F. Elssler, as assistant to the Vice-President with headquarters in the company's new office building in New York. W. C. Straub, formerly district manager of the New Orleans Branch, has been appointed district manager of the Pittsburgh Branch to succeed Mr. Elssler. Ross Wyeth succeeds Mr. Straub.

John W. Whiteley, formerly a member of the firm of Whitney & Kemmerer, of New York City, and George C. Foedisch, of Philadelphia formerly manager of Bituminous sales for the same firm, have formed a partnership under the name of Whiteley & Foedisch, and will mine and sell anthracite and bituminous coal and coke.

The first number of "The Pioneer," the new monthly magazine of the Island Creek Coal Company and of the Pond Creek Coal Co., both under the same management, made its appearance before Christmas. Geo. C. McIntosh of Huntington is the editor of the new monthly.

David Brown has resigned his position as manager of the Reserve Mine of the Canadian Western Fuel Co. in order to accept a leading and active part in the development of new coal fields situated north of the City of Kamloops.

W. A. Flanagan, acting treasurer and auditor of the Sun Coal Co., and Allied Coal Co., Ky., has resigned his position with those concerns, and will devote his time for the immediate future in the Rail & River Coal Co., of which he was one of the organizers.

Henry Menke, a miner employed by the Davis Coal & Coke Co., Md., received total wages of \$690 for the month of November, believed to be a record for miner's pay in this district. He earned \$356 during the first half of the month and \$334 in the latter half.

J. R. MacArthur, well known in mining circles in Illinois and Chicago, has accepted a position with the Rutledge & Taylor Coal Co., Fisher Bldg., Chicago, as city salesman.

James Johnson, a son of Thomas Johnson, of the Lorain Coal & Dock Co., Columbus who has been operating a jobbing concern in the Brunson Bldg., under the name of the Cedar Grove Fuel Co., has closed out the business and has become purchasing agent for the Lorain Coal & Dock Co.

The Goulds Manufacturing Co., Seneca Falls, New York, announces the appointment of Edward S. Jenison as acting General Sales Manager to succeed W. E. Dickey who recently retired from business. For the past five years Mr. Jenison has been manager of their Philadelphia office.

H. G. Nash, mine car engineer of the Huntington district, Industrial Bearings Division of the Hyatt Roller Bearing Co. is now connected with the Star Car & Foundry Co. as advertising manager.

E. B. Sutton, for a number of years district engineer in charge of the local station of the Bureau of Mines, and later connected with the West Virginia Coal & Coke Corporation, has returned to the Birmingham District and has accepted the position of chief mining engineer for the Sloss-Sheffield Steel & Iron Co.

## Publications Received

Preliminary Investigations of Storage Battery Locomotives — U. S. Bureau of Mines Technical Paper 264. Specifications, Laboratory Test, Permissible Schedule, by L. C. Hsley and H. B. Brunot.

## Obituary

Jos. L. Scanlon, of St. Paul, with the Superior Coal & Dock Co., died recently, of blood poisoning, after an illness of only a few days.

## Coming Meetings

National Retail Coal Merchants' Association. Fifth conference of executives at La Salle Hotel, Chicago, Ill., will be held on Jan. 17 and 18, 1921. Secretary—Manager, Ellery B. Gordon, Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921.

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretary, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb. 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland, Ohio.

American Institute of Electrical Engineers and American Institute of Mining Engineers will hold a combined meeting of the local sections on Jan. 21, 1921, Pittsburgh, Pa.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Acting secretary, R. R. Rose, Montreal, Quebec, Canada.